NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PLANNING AND RESEARCH BRANCH

THOROUGHFARE PLAN

MAY 1985

THOROUGHFARE PLAN

FOR

THE TOWN OF AHOSKIE, NORTH CAROLINA

Prepared by the
Planning and Research Branch
North Carolina Department of Transportation
Division of Highways

in cooperation with the
Town of Ahoskie, and the
United States Department of Transportation

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I. INTRODUCTION

Transportation planning for the Ahoskie area dates back to 1958, when the Town of Ahoskie requested the North Carolina State Highway Commission to develop a plan for future road and street needs in the area. Studies conducted in the early 1960's led to the development of a Preliminary Thoroughfare Plan for the Ahoskie area in 1964. This plan was subsequently adopted by the Town of Ahoskie on November 17, 1964, and by the North Carolina State Highway Commission on February 4, 1965.

On April 5, 1965, the Town of Ahoskie and the North Carolina State Highway Commission entered into an agreement to develop existing and future travel demand patterns and analyze the 1964 thoroughfare plan based on this data. This study's recommendations were incorporated in a revised thoroughfare plan (map dated December 1, 1967), and the Ahoskie Thoroughfare Plan report, February, 1969.

In December, 1983, the Ahoskie Town Council requested an update of the 1967 plan. Due to the construction of the NC 11 Bypass, the possible construction of a new Middle School on NC 561 west of Town, and the age of the existing plan it was felt that a plan update would be desirable. In 1984, a comprehensive street system inventory, detailed housing and employment inventories, and area-wide traffic count data was collected. This information was used to develop a set of travel forecast models. This report details the modelling process and plan development procedure used in updating the Ahoskie Area Thoroughfare Plan.

The system of thoroughfares proposed was developed following the basic principles of thoroughfare planning as described in Section II of this report. Major thoroughfares were located based upon field investigations, existing and anticipated land uses, and topographic conditions. The plan advocates those improvements which are felt to be essential for proper traffic circulation within the revised planning period (1984-2005).

Some of the proposed improvements will be the responsibility of the Division of Highways, while the Town will be responsible for other improvements. With the different governmental units involved in developing the thoroughfare system, coordination is of prime importance. Thus, the Plan is formally adopted by both the local governing body and the Board of Transportation to serve as a mutual, official guide in the development of the thoroughfare system.

In order for the Plan to be effective, it is essential that the town use legal controls, such as subdivision regulations to protect the rights-of-way necessary for the improvements which will be ultimately required.

It should be emphasized that the Plan is based on the anticipated growth of the urban area as indicated by current trends. If actual growth rates and patterns differ from those anticipated, it may become desirable to accelerate or retard the development of the system or to make adjustments in the Plan commensurate with variations between the actual and anticipated development.

II. THOROUGHFARE PLANNING PRINCIPLES

Typically, the urban street system occupies 25 to 30 percent of the total developed land in an urban area. Since the system is permanent and expensive to build and maintain, much care and foresight are needed in its development. Thoroughfare planning is the process public officials use to assure the development of the most appropriate street system that will meet existing and future travel desires within the urban area.

The primary aim of a thoroughfare plan is to guide the development of the urban street system in a manner consistent with changing traffic demands. Through proper planning for street development, many costly errors and much needless expense can be averted. A thoroughfare plan will enable street improvements to be made as traffic demands increase, and help eliminate unnecessary improvements. By developing the urban street system to keep pace with increasing traffic demands, a maximum utilization of the system can be attained that will require a minimum amount of land for street purposes. In addition to providing for traffic needs, the thoroughfare plan should embody those details of good urban planning necessary to present a pleasing and efficient urban community. The location of present and future population, commercial, and industrial enterprises, affects major street and highway locations. Conversely, the location of major streets and highways within the urban area will influence the urban development pattern.

Other objectives of a thoroughfare plan include:

(1) To provide for the orderly development of an adequate major street system as land development occurs;

(2) To reduce travel and transportation costs;

(3) To reduce the cost of major street improvements to the public through the coordination of the street system with private action;

(4) To enable private interests to plan their actions, improvements, and development with full knowledge of public intent;

(5) To minimize disruption and displacement of people and businesses through long range advance planning for major street improvements;

(6) To reduce environmental impacts such as air pollution, resulting from transportation;

(7) To increase travel safety.

Thoroughfare planning objectives are achieved through both: (1) improving the operational efficiency of thoroughfares; and (2) improving the system efficiency through system coordination and layout.

Operational Efficiency

A street's operational efficiency is improved by increasing the capability of the street to carry vehicular traffic and people. In terms of vehicular traffic, a street's capacity is defined as the maximum number of vehicles which can pass a given point on a roadway during a given time period under prevailing roadway and traffic conditions. Capacity is affected by the physical features of the roadway, nature of traffic and weather.

Physical ways to improve vehicular capacity include Street widening, intersection improvements, improving vertical and horizontal alignment, and eliminating roadside obstacles. For example, widening of a street from two to four travel lanes more than doubles the capacity of the street by providing additional maneuverability for traffic. Impedances to traffic flow caused by slow moving or turning vehicles and adverse effects of horizontal and vertical alignments are thus reduced.

Operational ways to improve street capacity include:

(1) Control of access - A roadway with complete access control can often carry three times the traffic handled by a non-controlled access street with identical lane width and number.

(2) Parking removal - Increases capacity by providing additional street width for traffic flow and reducing friction to flow caused by parking and unparking vehicles.

(3) One-way operation - The capacity of a street can sometimes be increased 20-50%, depending upon turning movements and overall street width, by initiating one-way traffic operations. One-way streets can also improve traffic flow by decreasing potential traffic conflicts and simplifying traffic signal coordination.

(4) Reversible lanes - Reversible traffic lanes may be used to increase street capacity in situations where heavy directional flows occur during peak periods.

(5) Signal phasing and coordination - Uncoordinated signals and poor signal phasing restrict traffic flow by creating excessive stop-and-go operation.

Altering travel demand is a third way to improve the efficiency of existing streets. Travel demand can be reduced or altered in the following ways:

(1) Encourage people to form carpools and vanpools for journeys to work and other trip purposes. This reduces the number of vehicles on the roadway and raises the people carrying capability of the street system.

(2) Encourage the use of transit and the bicycle mode.

(3) Encourage industries, business, and institutions to stagger work hours or establish variable work hours for employees. This will reduce travel demand in peak periods and spread peak travel over a longer time period.

(4) Plan and encourage land use development or redevelopment in a more travel efficient manner.

System Efficiency

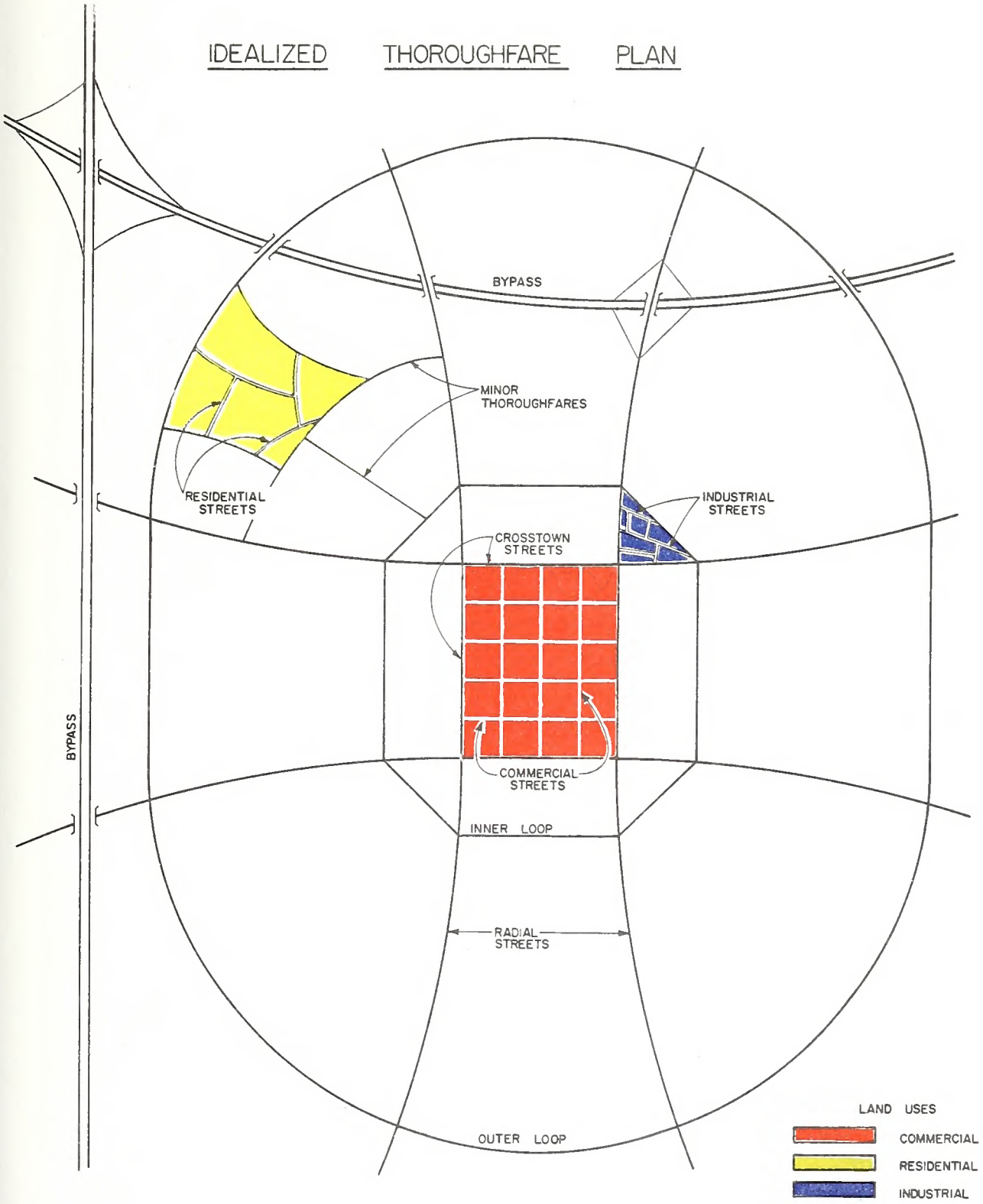
Another means for altering travel demand is the development of a more efficient system of streets that will better serve travel desires. A more efficient system can reduce travel distances, time, and cost. Improvements in system efficiency can be achieved through the concept of functional classification of streets and development of a coordinated major street system.

Functional Classification

Streets perform two primary functions--traffic service and land service, which when combined, are basically incompatible. The conflict is not serious if both traffic and land service demands are low. However, when traffic volumes are high, conflicts created by uncontrolled and intensely used abutting property lead to intolerable traffic flow friction and congestion.

The underlying concept of the thoroughfare plan is that it provides a functional system of streets which permits travel from origins to destinations with directness, ease, and safety. Different streets in the system are designed and called on to perform specific functions, thus minimizing the traffic and land service conflict. Streets are categorized as to function as local access streets, minor thoroughfares, or major thoroughfares (see Figure 1).

FIGURE 1


IDEALIZED THOROUGHFARE PLAN
BYPASS
MINOR THOROUGHFARES
RESIDENTIAL STREETS
INDUSTRIAL STREETS
CROSSTOWN STREETS
COMMERCIAL STREETS
INNER LOOP
RADIAL STREETS
OUTER LOOP
BYPASS
LAND USES
COMMERCIAL
RESIDENTIAL
INDUSTRIAL

Local Access Streets provide access to abutting property. They are not intended to carry heavy volumes of traffic and should be located such that only traffic with origins and destinations on the streets would be served. Local streets may be further classified as either residential, commercial, and/or industrial depending upon the type of land use which they serve.

Minor Thoroughfares are more important streets in the city system. They collect traffic from local access streets and carry it to the major thoroughfare system. They may in some instances supplement the major thoroughfare system by facilitating minor through traffic movements. A third function which may be performed is that of providing access to abutting property. They should be designed to serve limited areas so that their development as major thoroughfares will be prevented.

Major Thoroughfares are the primary traffic arteries of the city. Their function is to move intra-city and inter-city traffic. The streets which comprise the major thoroughfare system may also serve abutting property; however, THEIR MAJOR FUNCTION IS TO CARRY TRAFFIC. They should not be bordered by uncontrolled strip development because such development significantly lowers the capacity of the thoroughfare to carry traffic and each driveway is a danger and an impediment to traffic flow. Major thoroughfares may range from a two-lane street carrying minor traffic volumes to major expressways with four or more traffic lanes. Parking normally should not be permitted on major thoroughfares.

Idealized Major Thoroughfare System

A coordinated system of major thoroughfares forms the basic framework of the urban street system. A major thoroughfare system which is most adaptable to desire lines of travel within an urban area and which permits movement between various areas of the city with maximum directness is the radial-loop system. This system consists of several functional elements-radial streets, crosstown streets, loop system streets, and bypasses (Figure 1).

Radial streets provide for traffic movement between points located in the outskirts of the city and the central area. This is a major traffic movement in most cities, and the economic strength of the central business district depends upon the adequacy of this type of thoroughfare.

If all radial streets crossed in the central area, an intolerable congestion problem would result. To avoid this problem, it is very important to have a system of crosstown streets which form a loop around the central business district. This system allows traffic moving from origins on

one side of the central area to destinations on the other to follow the area's border and allows central area traffic to circle and then enter the area near a given destination. The effect of a good crosstown system is to free the central area of crosstown traffic, thus permitting the central area to function more adequately in its role as a pedestrian shopping area.

Loop system streets move traffic between suburban areas of the city. Although a loop may completely encircle the city, a typical trip may be from an origin near a radial thoroughfare to a destination near another radial thoroughfare. Loop streets do not necessarily carry heavy volumes of traffic, but they function to help relieve central areas. There may be one or more loops, depending on the size of the urban area, and they are generally spaced one-half mile to one mile apart, depending on the intensity of land use.

A bypass is designed to carry traffic through or around the urban area, thus providing relief to the city street system by removing from it traffic which has no desire to be in the city. Bypasses are usually designed to through highway standards, with control of access. Occasionally, a bypass with low traffic volume can be designed to function as a portion of an urban loop. The general effect of bypasses is to expedite the movement of through traffic and to improve traffic conditions within the city. By freeing the local streets for use by shopping and home-to-work traffic, bypasses tend to increase the economic vitality of the local area.

Application of Thoroughfare Planning Principles

The concepts presented in the discussion of operational efficiency, system efficiency, functional classification, and idealized major thoroughfare system are the conceptual tools available to the transportation planner in developing a thoroughfare plan. In actual practice, thoroughfare planning is done for established urban areas and is constrained by existing land use and street patterns, existing public attitudes and goals, and current expectations of future land use. Compromises must be made because of these and the many other factors that affect major street locations.

Throughout the thoroughfare planning process it is necessary from a practical viewpoint that certain basic principles be followed as closely as possible. These principles are as follows:

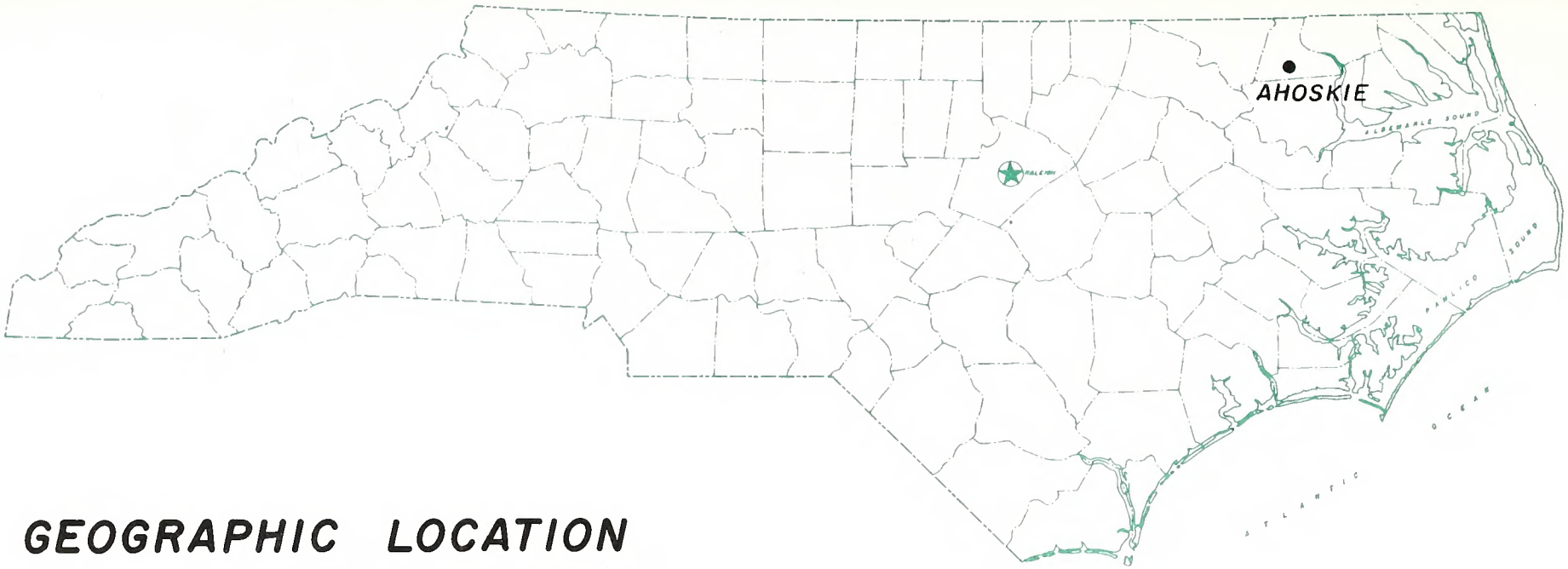
1. The plan should be derived from a thorough knowledge of today's travel - its component parts, as well as the factors that contribute to it, limit it, and modify it.

2. Traffic demands must be sufficient to warrant the designation and development of each major street. The thoroughfare plan should be designed to accommodate a large portion of all major traffic movements on a relatively few streets.

3. The plan should conform to and provide for the land development plan of the area.

4. Certain considerations must be given to urban development beyond the current planning period. Particularly in outlying or sparsely developed areas which have development potential, it is necessary to designate thoroughfares on a long-range planning basis to protect rights of way for future thoroughfare development.

5. While being consistent with the above principles and realistic in terms of travel trends, the plan must be economically feasible.



GEOGRAPHIC LOCATION
AHOSKIE, NORTH CAROLINA

AHOSKIE IS LOCATED IN HERTFORD COUNTY IN THE COASTAL PLAINS SECTION OF NORTH CAROLINA. SITUATED IN THE NORTHEASTERN AREA OF THE STATE, IT IS APPROXIMATELY 24 MILES SOUTH OF THE VIRGINIA STATE LINE AND 110 MILES NORTHEAST OF RALEIGH.

FIGURE 2

III. EXISTING AND PROJECTED CONDITIONS

The Planning Area

The Town of Ahoskie is located in the southern portion of Hertford County, 24 miles south of the Virginia State Line. The Town serves as the major commercial center for the Roanoke-Chowan area, and because of the largely rural surroundings has a regional economic importance far beyond its size. The Town is served by the Seaboard Coast Line Railway, US Highway 13, and North Carolina Highways 11, 42, and 561. These major facilities along with Secondary Roads 1101, 1106, and 1415 provide access to Ahoskie from most surrounding communities.

Factors Affecting Transportation

The three most important factors in determining the transportation needs of any area are its population, economy, and land use characteristics. Examination of these factors helps to explain historic travel patterns and lays the groundwork for future thoroughfare planning.

To design an adequate 20-year thoroughfare plan, reliable forecasts of future travel characteristics must be achieved. Such forecasts are possible only when the following major items are carefully analyzed: (1) historic and potential population changes; (2) significant trends in the economy; (3) character and intensity of land development; and (4) motor vehicle registration and usage. Additional items that vary in influence include the effects of legal controls such as subdivision regulations and zoning ordiances, availability of public utilities and transportation facilities, and topographic and other physical features of the urban area.

In order to inventory traffic and transportation facilities, collect economic and socio-economic data, and to estimate future traffic demand, it was necessary to delineate the study or transportation planning area. This is the area which might become urbanized by the end of the planning period in the year 2005. Due to the construction of the NC 11 Bypass and the trend to more suburban growth patterns the current planning area has been greatly expanded from the earlier studies. This study area was divided into 42 traffic analysis zones. An attempt was made to keep these zones as homogeneous as possible in socio-economic character. This planning area and the traffic analysis zones within it are shown in Figure 3. The external boundary of the planning area is known as the cordon.

FIGURE 3

PLANNING AREA ZONE MAP

LEGEND

EXTERNAL CORDON

SCREENLINES

ZONE BOUNDARIES

EXTERNAL STATIONS 50 — 66

AHOSKIE
AND VICINITY

HERTFORD COUNTY

NORTH CAROLINA

SCALE

AUGUST, 1975

Population

The total travel demand within an area is directly related to the population located there. The traffic volume on any segment of roadway is largely determined by the size and distribution of the populated areas it serves.

Ahoskie and the Ahoskie Planning Area lie within the Ahoskie Township in Hertford County. Because City limits fluctuate due to annexation and much recent population growth has been occurring outside the Town, the County and Township were chosen as a basis for predicting planning area population. A step-down method was used for estimating County, Township, Planning Area, and Town populations.

The County population was determined for 1984 from Census figures and estimates, and for the design year (2005) from a U.S. Department of Commerce publication "County Level Projections of Economic Activity and Population: North Carolina, 1985-2040." Once these County population figures were developed, the Township, Planning Area and Town populations were derived from those values. Table 1 shows population census counts and the estimates used.

TABLE 1

Population Counts and Estimates for Hertford County, Ahoskie Township, Ahoskie, and the Planning Area

Year	Hertford County	Ahoskie Township	Ahoskie	Planning Area
1950[a]	21,453	6,671	3,579	
1960[a]	22,718	8,031	4,583	
1970[a]	24,439	8,535	5,105	
1980[a]	23,368	8,707	4,887	
1984[b]	24,200	9,000	5,000	7,500
2005[b]	29,000	11,500	6,500	9,200

[a]U. S. Bureau of Census
[b]Estimates

The planning area population estimate was checked by applying a dwelling unit occupancy rate to the housing inventory taken in 1984. The dwelling unit (DU) occupancy rate for Ahoskie in 1980 was determined by the Census to be 2.66 persons per DU, while the rate for the Ahoskie Township was 2.75. Plotting trends from earlier census years gives a 1984 ratio estimate for the Town of 2.58 and 2.63 persons per DU for the Township. If the planning area occupancy rate for 1984 is taken to be 2.60 persons per DU and multiplied by the 2885 dwelling units within the planning area, a total population of 7501 is obtained. Table 2 shows the persons per dwelling unit comparison and projections made.

TABLE 2

Dwelling Unit Occupany Rate Comparisons and Projections

Persons per Dwelling Unit

Year	Hertford County	Ahoskie Township	Ahoskie	Planning Area
1970[a]	3.45	3.29	3.09	
1980[a]	2.83	2.75	2.66	
1984[b]	2.70	2.63	2.58	2.60
2005[b]	2.48	2.44	2.40	2.42

[a]U. S. Bureau of the Census
[b]Estimates

Although the population of Ahoskie and Hertford County declined from 1970 to 1980, the population of the Ahoskie Township increased. The percentage of the County's population residing in the Ahoskie Township was 36.52% in 1970 and increased to 37.27% in 1980. It is felt that due to declining employment opportunities in agriculture, and an expected growth of the industrial and commercial base in the Ahoskie area that the percentage of the total county's population within the Ahoskie Township will continue to gradually increase to 39.66% in the year 2005.

During the decade from 1970 to 1980 the percentage of the Township population living within the town limits of Ahoskie declined from 59.81% to 56.13%. Reflecting this suburbanization trend, the percentage of the Township population expected to reside within the planning area is projected to decrease slightly over the planning period from 83.33% in 1984, to 80.00% in the year 2005. The resulting planning area population increase to 9200 persons from 7500 persons in the base year represents an average annual growth rate of 1.08% per year. The growth rates expected for Hertford County, the Ahoskie Township, and Ahoskie are 0.94%, 1.32%, and 1.52% respectively.

Statewide housing projections call for the statewide average to be 2.40 persons per DU in the year 2005. The Ahoskie Town average is projected to meet that figure while the planning area value is slightly higher reflecting the higher occupancy rate values usually found in rural areas. The design year planning area population (9200 persons), when divided by the dwelling unit occupancy rate yields approximately 3800 dwelling units in the planning area in the year 2005. These housing units were distributed to the traffic analysis zones on the basis of existing and anticipated future lane use. The resulting planning area population distribution by zone is shown in Table 3.

TABLE 3

1984 AND 2005 POPULATION DISTRIBUTION FOR THE PLANNING AREA BY TRAFFIC ZONE

ZONE	1984 POPULATION	2005 POPULATION
1	85	81
2	223	208
3	286	270
4	361	369
5	447	423
6	278	324
7	190	176
8	167	124
9	466	447
10	198	216
11	401	386
12	117	109
13	110	205
14	318	404
15	463	604
16	143	200
17	226	243
18	324	351
19	94	191
20	175	333
21	108	202
22	23	125
23	0	0
24	24	22
25	26	40
26	224	206
27	151	156
28	16	48
29	164	201
30	13	12
31	45	91
32	182	271
33	84	76
34	145	135
35	5	21
36	26	202
37	186	352
38	148	240
39	65	60
40	278	361
41	182	271
42	341	418
TOTALS	7508	9174

Economy and Employment

One of the most important factors to consider in estimating future travel demands is the economic base of the area. The amount of employment within an area and the employee income or purchasing power determine how much population the area can support, and the number of motor vehicles that can be locally owned and operated. Generally, as the family income increases so does the number of vehicles owned, and the number of vehicle trips per day generated by each household. An accurate projection of the future economy of the area is essential to estimating future travel demand.

Table 4 gives past and projected per capita incomes for Hertford County. The table indicates that for the county, per capita income is expected to grow by almost 64% during the planning period. This anticipated increase would be a result of a generally improved economy, better job opportunities, increasing labor productivity, and an improved transportation system.

TABLE 4

Past and Projected Per Capita Incomes[a]
(1972 dollars)

Year	Hertford County Per Capita Incomes
1969	$2601
1978	$3366
1985[b]	$4423
2005[b]	$7237

[a]Bureau of Economic Analysis, U. S. Department of Commerce, County Level Projections of Economic Activity and Population: North Carolina, 1985-2040.

[b]Interpolated from years 2000 and 2010 data.

No figures are available for the planning area itself, but it seems reasonable to expect that they would follow the county trends.

The trip attraction equation developed from the 1964 origin and destination survey was also used in this study. From that study it was determined that the relative attractiveness of each zone was related to the total number of retail, hospital, and other employees within each zone. The 1984 employment survey yielded 1054 persons working in

retail trade, 307 persons working at the Roanoke-Chowan Hospital, and 2238 persons working at all other activities. This total base year employment of 3599 persons represents 48% of the planning area population. By holding this ratio constant, 4400 employees will be expected in the design year. This total year 2005 employment was then broken down into the retail, hospital, and other categories. The design year hospital employment was derived first by assuming that it would grow at the same rate as the county's population. Once the hospital employment was projected and taken out of the total, the retail and other employment totals were allocated in the same proportions that existed in the base year 1984.

These employment figures were allocated to the individual traffic zones on the basis of existing and expected future land development. The 1984 and 2005 housing and employment distribution by type is shown in Table 5.

TABLE 5

AHOSKIE BASE YEAR (1984) AND DESIGN YEAR (2005)
SOCIO-ECONOMIC DATA

ZONE	RETAIL EMPLOYMENT 1984	RETAIL EMPLOYMENT 2005	OTHER EMPLOYMENT 1984	OTHER EMPLOYMENT 2005	DWELLING UNITS 1984	DWELLING UNITS 2005
1	24	24	354	354	33	33
2	17	17	90	90	86	86
3	0	0	3	3	110	110
4	60	70	26	26	139	153
5	30	30	89	89	172	172
6	15	15	46	46	107	135
7	62	62	53	53	73	73
8	71	71	161	191	64	51
9	164	164	66	66	179	186
10	243	283	113	143	76	90
11	147	157	194	205	154	161
12	0	0	3	3	45	45
13	0	25	308@	401@	42	85
14	0	0	0	0	122	165
15	0	0	81	92	178	250
16	3	3	11	11	55	83
17	0	0	1	1	87	101
18	6	6	38	38	125	146
19	0	0	0	0	36	79
20	0	0	0	0	67	139
21	0	0	99	129	41	84
22	0	10	0	0	9	52
23	2	2	0	70	0	0
24	45	45	79	109	9	9
25	2	2	0	0	10	17
26	50	75	43	73	86	86
27	1	1	1	1	58	65
28	0	0	0	70	6	20
29	0	3	4	74	63	84
30	0	0	392	462	5	5
31	0	0	38	38	17	38
32	57	97	112	112	70	113
33	21	21	6	6	32	32
34	0	0	8	8	56	56
35	0	3	0	0	2	9
36	0	25	0	0	10	82
37	3	3	79	79	71	143
38	14	39	7	17	57	100
39	15	15	40	40	25	25
40	0	0	0	0	107	150
41	0	10	0	10	70	113
42	2	12	0	0	131	174
TOTALS	1054	1290	2545	3110	2885	3800

@ INCLUDES 307 HOSPITAL EMPLOYEES IN THE BASE YEAR AND 370 IN THE DESIGN YEAR.

Land Use

The generation of traffic on a particular street is very closely related to the manner in which adjacent land is used. Some types of land uses generate more traffic than do others, and the attraction among different land uses varies with the intensity and spatial separation of the uses. Therefore, in transportation planning, it becomes necessary to designate land uses by type so that an analysis of the distribution of existing land uses can serve as a basis for forecasting future land uses and the resulting travel patterns.

Base year land use data were obtained from the dwelling unit and employment surveys assisted by aerial photography. This data along with topographic mapping and advice from Town officials was used to project future land development. These future land use projections were not only used to forecast future employment and housing allocations, but also in determining the type of facility required to provide adequate service to the various areas. Generalized anticipated future land uses are shown in Figure 4.

Large swampy areas immediately south and east of Ahoskie are expected to channel growth to the west and northwest. The greatest growth is expected along the NC 561 West corridor around the NC 11 intersection and between there and town. Lower growth rates are anticipated along the US 13 corridor and on NC 42 southwest of town.

Travel

Traffic volume counts on existing streets show where existing travel is occurring. While these counts are useful in evaluating the physical ability of the existing system to meet current travel demands, they reveal little as to the actual travel desires (origins and destinations) of the motorist and they permit no evaluation of the functional sufficiency of the system. For thoroughfare planning purposes, a comprehensive knowledge of the origins and destinations of existing traffic and estimated future traffic is essential.

The type, intensity, and location of the population and employment within an area largely determine the travel patterns. The method used to predict future travel involves the development of mathematical models relating population and employment to travel. Models are developed to (1) estimate trips produced (origins) and trips attracted (destinations) by traffic zones and (2) to estimate travel patterns between zones. Separate models are developed for the three basic types of trips - internal, external, and through. Internal trips are defined as those trips which have both origin and destination inside the planning area. An external trip is a trip which has one end inside the planning area and the other end outside. Through trips are defined as those trips which have both origin and destination outside the study area.

FIGURE 4

GENERALIZED EXISTING AND FUTURE LAND USES

LEGEND

RESIDENTIAL

INDUSTRIAL

COMMERCIAL

PUBLIC

N

S

AHOSKIE
AND VICINITY

HERTFORD COUNTY

NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

SCALE

AUGUST 1975

FIGURE 5

1984 MAJOR TRAVEL DESIRE LINES

LEGEND

EXTERNAL CORDON

SCREENLINES

ZONE BOUNDARIES

EXTERNAL STATIONS 50 — 66

TRAVEL DESIRES 000

N

S

AHOSKIE

AND VICINITY

HERTFORD COUNTY

NORTH CAROLINA

SCALE

AUGUST, 1975

The travel forecast models for Ahoskie were developed on the basis of traffic, employment, and population data obtained for the base year 1984. The validity of the models to duplicate travel were tested by comparing the traffic volumes estimated by the models to traffic volume counts taken on the existing street system.

After travel forecast models have been calibrated such that they adequately duplicate travel, design year travel estimates are produced through the input of design year data on population and employment. The trip distribution models are sensitive to changes in the street system and some variation will occur in the estimated travel patterns as alternative future street plans are tested. A more detailed documentation of the travel forecast models is given in Appendix B.

A summary of the travel data is given in Table 6. In 1984, the zones attracting the most trips were 13, 10, 11, and 9. Zone 13 which contains the Roanoke-Chowan Hospital with over 13,000 trips a day had more than twice as many trips as the next most attractive zone (10). The design year trip patterns have the same four zones as the major attractors, but indicate a shift toward the NC 42 South corridor. The zones with the greatest growth are zone 13, zone 10 and zones 32 and 33. Major travel desire lines for the years 1984 and 2005 are shown in Figures 5 and 6 respectively. It should be noted that although only the heaviest movements are shown, travel is expected to increase throughout the planning area.

TABLE 6

Ahoskie Transportation Planning Area
Travel Data Summary

	Base Year 1984	Design Year 2005	Percent Change 1984-2005
Population	7,500	9,200	22.67
Employment	3,599	4,400	22.26
Avg. Daily Trips/DU	7.35	8.59	16.87
Number of Internal Trips	30,204	49,036	62.35
Number of External Trips	24,250	48,732	100.96
Number of Through Trips	3,400	6,577	93.44
Total Number of Trips	57,854	104,345	80.36

FIGURE 6

2005 MAJOR TRAVEL DESIRE LINES

LEGEND

EXTERNAL CORDON

SCREENLINES

ZONE BOUNDARIES

EXTERNAL STATIONS 50 — 66

TRAVEL DESIRES 000

AHOSKIE
AND VICINITY

HERTFORD COUNTY

NORTH CAROLINA

SCALE

AUGUST 1975

FIGURE 7

1984 TRAFFIC VOLUMES ON THE EXISTING MAJOR STREET NETWORK

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AHOSKIE

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HERTFORD COUNTY

NORTH CAROLINA

SCALE

AUGUST, 1975

IV. DEVELOPMENT AND ANALYSIS OF ALTERNATE PLANS

Existing System

A Highway Needs Study conducted by the Planning and Research Branch, NCDOT for the Federal Highway Administration in 1970 resulted in the classification by primary use of all major roads and highways in North Carolina. This report was updated in Hertford County in 1975. According to this updated classification, US 13 is a minor arterial route, NC 11 and NC 561 are major collectors, and SR 1403, SR 1415, and SR 1419 are minor collectors. These facilities provide access from Ahoskie to the surrounding communities.

Traffic counts were taken in the Ahoskie area in the spring of 1984 by the Traffic Survey Section of the Planning and Research Branch. These counts are shown in Figure 7.

Intersection and Street Capacities

The generally accepted level of service for urban design is LOS 'C'. Capacity figures used in this report are those values that fall roughly on the border between Level of Service 'C' and LOS 'D'. There are currently no street segments in Ahoskie operating near their generalized capacity. "Spot" congestion problems do exist at the intersections of Memorial Drive (US 13) and Catherine Creek Road (SR 1415), Academy Street (US 13) and First Street (NC 561), and on NC 561 at the High School. The first two "spot" problems are a result of local traffic mixing with the through traffic on US 13.

FIGURE 8

PROJECTED 2005 TRAFFIC VOLUMES ON THE EXISTING MAJOR STREET NETWORK

LEGEND

DESIGN YEAR TRAFFIC VOLUMES 0000

CAPACITY DEFICIENT AREAS

N

S

AHOSKIE

AND VICINITY

HERTFORD COUNTY

NORTH CAROLINA

SCALE

Projected Capacity Deficiencies

There are no major construction projects listed for the Ahoskie area in the current North Carolina State Transportation Improvement Program 1985-1994. Therefore, the design year (2005) travel desires were assigned to the existing major street network to test the adequacy of this system to provide travel service for the future. The projected traffic volumes on the major street network thus derived are shown in Figure 8. Also highlighted are those segments of the street system that are anticipated to experience operating characteristics below a Level of Service 'C'. These areas of "capacity deficiency" are sections where the existing roadway is not capable of providing for safe and efficient operation at the projected traffic volume levels.

The major areas of anticipated capacity deficiency and their respective projected volume to capacity (v/c) ratios are as follows:

US 13 South and NC 42 East SR 1418 to NC 561	v/c varies from 1.20 to 1.59,
US 13 North City Limits to SR 1213	v/c varies from 1.18 to 1.44,
Memorial Drive (US 13 & NC 42) Over Seaboard Coast Line Railroad	v/c = 1.36,
NC 42 West SR 1108 to Memorial Drive	v/c varies from 1.16 to 1.27,
Academy Street (US 13 and NC 561) Church Street to First Street	v/c = 1.20,
Catherine Creek Road (SR 1415) Memorial Drive to Main Street	v/c = 1.10;

and in addition, NC 561 west of town will be barely operating within these capacity limits with a projected volume to capacity ratio of 0.99.

Most of the projected capacity deficiencies occur on the major radials leading into town. US 13, NC 42, Catherine Creek Road, and NC 561 are expected to be near or exceed their safe, practical traffic carrying capabilities during this planning period. The other source of capacity deficient areas is the US 13 corridor through town. The deficient areas on Memorial Drive and Academy Street are a result of the through traffic from US 13 joining the local traffic on these streets.

The radial nature of many of the projected deficiencies stem from the "hub" nature of the Town. Much of the traffic in the Ahoskie area is generated by its function as a regional commercial center for southern Hertford and northern Bertie Counties. This pattern also indicates a general system deficiency where virtually all travel through the region must enter the Town of Ahoskie by way of one radial and leave by another. The one recent major new roadway constructed, the NC 11 Bypass, addressed a portion of this deficiency. Still other bypasses or loops will probably be needed in the future.

Traffic Accidents

Due to the gentle topography and the generally good design of most major intersections within the Ahoskie area, there have been no intersections averaging as many as ten accidents per year for the last five years. The intersection with the most accidents in the five year period 1980 through 1984, Memorial Drive and Catherine Creek Road, received major improvements in 1984 which should improve its safety. Listed below in Table 7 are those intersections which reported 15 or more accidents in the five year period from 1980 to 1984.

TABLE 7

Ahoskie Area Frequent Accident Locations

Intersection	Total Accidents	Severity Index
Memorial Dr.-Catherine Creek Rd.	37	8.57
Academy St.-Church St.	21	12.17
Memorial Dr.-Godwin St.	19	8.62
Memorial Dr.-Brown St.	17	10.03
First St.-Rhue St.	16	15.66
Memorial Dr.-Academy St.	16	10.05
Main St.-Rhue St.	15	7.03
First St.-Maple St.	15	4.62

The severity index for each of these intersections was calculated using the following formula:

$$SI = \frac{47.7(F + A) + 11.8(B + C) + PDO}{T}$$

where

F = Fatal injury accidents
A = A type injury accidents
B = B type injury accidents
C = C type injury accidents
PDO = Property damage only accidents
T = Total accidents;

A majority of the intersections listed in Table 7 are located on the US 13 route, where local traffic mixes with higher speed through traffic. The recently completed widening of Memorial Drive should help the Godwin and Brown Street intersections as well as its intersection with Catherine Creek Road.

Non-Construction Improvement Alternatives

Non-construction improvement techniques include such actions as eliminating on-street parking, improving traffic signal coordination, and restricting turning movements. Since most of the facilities with projected capacity deficiencies do not currently allow parking, little additional capacity could be achieved along these routes. Removing parking and restricting turning movements on Main Street could improve its capacity and decrease accident rates. However, due to the commercial retail nature of the development along Main Street, adequate off-street parking would have to be provided before removing on-street parking would be a viable alternative. Any additional turning movement restrictions would need to be studied to ensure that excessive circuitous routing would not result.

Most of the projected capacity deficiencies are on the major radials and through routes within the area. These routes are currently providing virtually all the travel service they can given the desirability of these facilities also providing a certain measure of adjoining land use service. Probably the greatest improvement over time would be achieved through the restriction or elimination of driveway entrances onto these major thoroughfares.

The Do-Nothing Alternative

The do-nothing alternative often looks like a relatively attractive trade-off of accepting a little extra delay and inconvenience in order to avoid the expense and disruption of new road construction. In areas of little-to-no traffic growth this view might be true, but the Ahoskie area is

projected to have over an 80% percent growth in total trips through the planning period. If this anticipated growth occurs, unacceptable traffic conditions will occur in several areas (see Figure 8). The major arteries through town (US 13 and NC 42) will become extremely congested making entrances and exits from abutting businesses almost impossible and stifling potential economic growth in these areas.

As the traffic volumes on the major streets approach their practical capacities, the number of accidents increase, as do delays and pollutants emitted by the vehicles on the street. As the delays on the major street system increase, drivers search out alternate paths to travel. First, Main, and Church Streets can provide some relief for the Memorial Drive corridor, but there are currently few alternatives to the Academy Street corridor.

Alternate Plans

The first alternate plan evaluated was the existing (1967) thoroughfare plan. The major proposals in that plan were found to still be desirable, and with some adjustments still feasible. The major components of that plan (see Figure 9), the US 13 Bypass, the Holloman Avenue Loop, and an east-west connector south of town were determined to be the primary goals of any subsequent plan development.

On February 28, 1985, the Ahoskie Town Planning Board was shown six groups of currently feasible ways to achieve these goals. Through discussion of these alternatives the preferred alignments for these routes, as well as some other proposals were determined. On March 21, 1985, this plan proposal was formally approved by the Planning Board and recommended to the Town Council for adoption.

Since the alternatives discussed were generally confined to alignment shifts or variations of the 1967 plan, they will not be shown. The new, 1985, recommended plan is essentially an expanded, revised version of the 1967 plan. The proposed changes and additions will be discussed individually in the next chapter.

THOROUGHFARE PLAN

ADOPTED BY AHOSKIE ON FEB. 19, 1968.

RECOMMENDED APPROVAL BY ADVANCE PLANNING DEPARTMENT ON FEB. 29, 1968. W Howard

ADOPTED BY NORTH CAROLINA STATE HIGHWAY COMMISSION ON APRIL 5, 1968.

PROPOSED BYPASS

US 13

SR 1413

SR 1415

HOLLOMAN AVE

PROPOSED LOOP

MITCHELL

McCLOHON ST.

CATHERINE ST.

FIRST ST.

MAIN ST.

CHURCH ST.

MEMORIAL DR.

RHUE ST.

CATHERINE CREEK RD.

SR 1417

US 13 & NC 350

SR 1101

SR 1126

NC 350

PROPOSED LOOP

LEGEND

	EXISTING	PROPOSED	LONG RANGE
MAJOR ALIGN.	▬▬	▬ ▬	▬▬▬
MINOR ALIGN.	──	─ ─	

FIGURE 9

THOROUGHFARE PLAN FOR

AHOSKIE, N.C.

DEC. 1, 1967

0 FEET 1000 2000

V. RECOMMENDATIONS

1985 Thoroughfare Plan

Major Thoroughfare System

The major thoroughfare system in Ahoskie is formed from bypasses, crosstowns, loop roads, and radials. These elements and the facilities that comprise each are as follows:

Bypasses
- NC 11
- US 13 Bypass

Crosstowns
- Academy Street
- Catherine Creek Road
- First Street
- Memorial Drive

Loops
- Holloman Avenue Loop
- Sunbeam Plant Road and Extensions

Radials
- Catherine Creek Road (SR 1415)
- New Ahoskie Road (SR 1101)
- NC 42
- NC 561
- US 13

Minor Thoroughfares

Minor thoroughfares are those facilities that provide access to all parts of the study area. In many ways they function as a collector-distributor system. In connection with the major thoroughfares these roads provide a well integrated transportation system within the planning area. Roads listed as minor thoroughfares are:

Alton Street
Catherine Street
Copeland Road (SR 1411)
Main Street
McGlohon Street
Pembroke Avenue
Rhue Street
SR 1413

Construction Priorities

An evaluation of the North Carolina highway program from administrative, historical, and financial perspectives indicates the following objectives are of greatest importance:

To improve the North Carolina arterial system to reduce travel costs and improve travel service between urban centers.

To improve the level of service and safety of all roads and highways on the State system in a cost effective manner.

To encourage economic development.

To preserve the natural and human environment.

To allocate funds to projects in a fair and equitable way.

(1) User benefits, (2) cost, (3) probability that a project will stimulate economic development, (4) quantification of environmental impacts, and (5) relationship of a project to the State arterial system provide a basis for evaluating projects as to how well they meet the objectives.

User benefits include cost savings resulting from an improvement project through reduction in vehicle operating costs, travel time costs, and accident costs. The estimated through travel served by a project provides a measure of the importance of a project to the State arterial system. Heavier volumes of through traffic are generally found on the more important facilities.

Estimation of environmental impacts of a project is one of the more difficult evaluations. Environmental factors usually considered in highway project evaluation can be divided into three major categories-physical, social and/or cultural, and economic environmental considerations (Table 8). Many of these are accounted for when a project is evaluated with respect to user benefits, cost, and economic development potential. However, thirteen environmental factors are generally not considered in these evaluations. They are the environmental impacts of a project on (1) air quality (2) water resources, (3) soils and geology, (4) wildlife, (5) vegetation (6) neighborhoods, (7) noise, (8) educational facilities, (9) churches, (10) park and recreational facilities, (11) historic sites and landmarks (12) public health and safety, and (13) aesthetics. The summation of both positive and negative impact probabilities with respect to these factors provides a measure of the relative environmental impact of a project.

Table 8

Environmental Considerations

Physical Environment	Social and/or Cultural Environment	Economic Environment
Air quality	Housing	Businesses
Water resources	Neighborhoods	Employment
Soils and geology	Noise	Economic development
Wildlife	Education facilities	Public utilities
Vegetation	Churches	Transportation costs
	Park and recreational facilities	Capital costs
	Public health and safety	Operation and maintenance costs
	National defense	
	Aesthetics	

Thoroughfare improvement needs identified in the Ahoskie thoroughfare plan and evaluated are:

Holloman Avenue Loop
Holloman Avenue Extension to DT Road
McGlohon Street Extension to Holloman Loop
Memorial Drive Widening
Memorial Drive Extension to Holloman Loop
NC 42 West Widening
Pembroke Avenue Extension to Holloman Loop
Sunbeam Plant Road Extension to Boone Road
Sunbeam Plant Road Extension to US 13 South
SR 1106 Extension to Boone Road
SR 1413 Extension to US 13 Bypass
US 13 Bypass

The evaluation of the twelve Ahoskie projects with respect to user benefits, estimated cost, probability that economic development will be stimulated, environmental impact, and through travel served is given in Table 9.

Traffic estimates for the year 2005 used to develop the recommended projects, the user benefits estimation, and estimation of through travel on the proposed facilities were developed as discussed in Appendix A. The user benefits

derived are in 1983 dollars while the cost estimates are for 1984. It is felt that the slight discrepancy between the value of the dollars used will not create any problems.

Considering the benefits evaluation of the proposed projects and the transportation problems identified earlier in this study, the following order of project priorities is recommended.

1) Memorial Drive (US 13, NC 42, and NC 561) Widening. This facility has a two lane bridge over the Seaboard Coast Line Railroad with multi-lane approaches on each side. It is proposed to widen this bridge to four lanes to eliminate the existing "bottleneck" situation.

Estimated Cost $2,500,000

2) US 13 Bypass. It is proposed to relocate US 13 to the east and north of Ahoskie. This will help relieve the growing traffic congestion on Academy Street and Memorial Drive, and remove much of the truck traffic that currently passes through town. It is recommended that this be a two lane rural cross section.

Estimated Cost $8,000,000

3) Holloman Avenue Loop. It is recommended that Holloman Avenue be extended westward as a 44 foot curb and gutter section to NC 561. This will provide a loop facility across the northern end of Ahoskie and provide better access to the school areas west of town.

Estimated Cost $1,200,000

4) Sunbeam Plant Road (SR 1105) Extension West. As a further step in the development of a loop system around Ahoskie as well as providing better access to the Fraziers' Crossroads commercial area, it is proposed to extend Sunbeam Plant Road to the north and east to intersect Boone Road. A two lane rural cross section is recommended.

Estimated Cost $1,800,000

5) Holloman Avenue Loop. To complete the proposed loop system around the western portion of Ahoskie it is recommended to continue the Holloman Avenue Loop south of NC 561 to intersect the Sunbeam Plant Road extension. A 44 foot curb and gutter cross section is recommended to the future Memorial Drive intersection, and a two lane rural cross section is recommended from that point to the Sunbeam Plant Road intersection.

Estimated Cost $1,100,000

6) Memorial Drive Extension. It is proposed to extend Memorial Drive westward to the Holloman Avenue Loop. A 44 foot curb and gutter section is recommended.

Estimated Cost $1,000,000

7) McGlohon Street Extension. It is recommended that McGlohon Street be extended northward to meet Mitchell Street, and that this McGlohon-Mitchell Street segment be extended northward to the Holloman Avenue Loop. A 36 foot curb and gutter section is recommended.

Estimated Cost $130,000

8) SR 1106 Extension to Boone Road. In order to eliminate an existing offset intersection, and provide improved access to the Fraziers' Crossroads commercial area, it is recommended to extend SR 1106 north across NC 42 to intersect Boone Road south of the Ahoskie Creek. A two lane rural cross section will be adequate.

Estimated Cost $250,000

9) Academy Street (NC 42 West). As the land along NC 42 develops and traffic grows, this facility will exceed its current practical, safe capacity. In order to eliminate this anticipated capacity problem, and provide for improved access to adjoining land parcels, it is recommended to widen this facility from Memorial Drive to SR 1106 to a five lane curb and gutter section.

Estimated Cost $2,500,000

10) Sunbeam Plant Road (SR 1105) Extension East. This proposed extension of Sunbeam Plant Road eastward to US 13 South will provide improved access to the existing industrial areas on this road. In addition, when combined with the connector to Boone Road and Boone Road, this facility will provide an east-west bypass south of town connecting US 13 and NC 11. A two lane rural cross section is recommended.

Estimated Cost $1,720,000

11) Holloman Avenue Extension East. In order to provide improved access to the growing residential areas along DT Road, it is proposed to extend Holloman Avenue eastward to DT Road. A two lane rural roadway is expected to be adequate.

Estimated Cost $1,200,000

12) SR 1453 Extension to US 13 Bypass. It is proposed to extend SR 1453 to intersect the US 13 Bypass. A two lane rural cross section is recommended for this facility.

Estimated Cost $100,000

13) Pembroke Avenue Extension. It is also proposed to extend Pembroke Avenue northward to the Holloman Avenue Loop. A residential type 36 foot curb and gutter section will be adequate for this facility.

Estimated Cost $200,000

Construction of the projects in the thoroughfare plan will require a certain amount of disruption to the existing conditions in the planning area. During the plan development process steps were taken to minimize any adverse impacts, but as with any development certain impacts are unavoidable.

The US 13 Bypass project is expected to affect two existing dwelling units, and the extension of Holloman Avenue to DT Road is expected to require removal of another. The Holloman Avenue Loop, the Sunbeam Plant Road extensions, and the Holloman Avenue extension to DT Road all cross currently undisturbed forest and wetlands. These seem to be the most notable adverse impacts to be expected from plan implementation.

Steps may be taken to minimize the social and physical impacts. Prohibiting construction along the proposed corridors will minimize the disruption derived from implementation, as well as decrease the cost. In the wetlands areas, erosion plans should be developed for construction, and drainage controls for the constructed facility need to be adequate. Wherever possible roads were planned to traverse streams and creeks instead of following the waterway to minimize impacts from runoffs.

Even with these irreversible negative impacts, the thoroughfare plan should provide the area with a safe, efficient transportation system that will be required in order for the area to grow and prosper.

TABLE 10

Benefits Evaluation

Project Description	User Benefits $1000[a]	Cost $1000[b]	Economic Development Potential Probability[c]	Environmental Impact Probability	Design Year Through Traffic (ADT)
Memorial Drive Widening over SCL Railroad	14,343	C-2500	.20	+ .52[d] - .03[e]	230
US 13 Bypass	24,853	R-1200 C-5800	1.00	+1.00 - .69	1800
Holloman Avenue Loop Catherine St. to NC 561	9,364	R- 300 C- 900	-	+ .49 - .17	15
Sunbeam Plant Road Extension to Boone Rd.	6,751	R- 300 C-1500	.40	+ .31 - .29	440
Holloman Avenue Loop NC 561 to Sunbeam Plant Rd. Ext.	13,239	R- 100 C-1000	.15	+ .37 - .15	130
Memorial Drive Extension to Holloman Ave. Loop	9,713	R- 100 C- 900	-	+ .40 - .17	90
McGlohon Street Extension to Holloman Ave. Loop	725	R- 30 C- 100	-	+ .25 - .08	0
SR 1106 Extension to Boone Rd.	3,454	R- 50 C- 200	.20	+ .23 - .08	680
NC 42 West Widening from Memorial Dr. to SR 1106	10,729	C-2500	.60	+ .71 - .11	100
Sunbeam Plant Road Extension to US 13 South	9,974	R- 300 C-1420	.60	+ .48 - .31	510
Holloman Avenue Extension to DT Road	6,095	R- 300 C-1200	.10	+ .45 - .48	100

TABLE 10 (Cont'd)

Benefits Evaluation

Project Description	User Benefits $1000[a]	Cost $1000[b]	Economic Development Potential Probability[c]	Environmental Impact Probability	Design Year Through Traffic (ADT)
SR 1453 Extension to US 13 Bypass	240	R- 20 C- 80	.15	+ .28 - .15	0
Pembroke Avenue Extension to Holloman Ave. Loop	95	R- 50 C- 150	-	+ .26 - .11	0

[a]Summation of estimation operating, user time, and accident cost savings, 1983-2003
[b]R-Estimated right-of-way cost; C-Estimated construction cost, 1984 Dollars
[c]Estimated probability project will stimulate economic development
[d]Probability project will have a positive environmental impact
[e]Probability project will have a negative environmental impact

Possible Plan Revisions

Two major revisions to the recommended plan may be required if development occurs differently than is currently projected. The first is a minor alignment adjustment of the proposed intersection of the proposed Sunbeam Plant Road extension with US 13 South. The current plan proposal is to have this intersection meet SR 1418 and the proposed US 13 Bypass to intersect further north. This presents a trade off between ease of east-west movement across US 13 South and the functioning of the intersection of existing US 13 and the proposed bypass. At the time this project is studied for implementation, the possibility of intersecting the Sunbeam Plant Road extension with the US 13 Bypass should be explored.

The second possible revision is on the short stretch of Academy Street from First Street to Church Street. The current traffic volume on this segment of roadway is over 70% of the practical, safe capacity. Much of the priority and benefits of the Holloman Avenue Loop, the Sunbeam Plant Road extension, and the Memorial Drive extension derives from their implementation relieving the need for widening Academy Street. Even with the development of these facilities the traffic on this segment is expected to exceed 90% of capacity by the year 2005. If these other facilities are not constructed in a timely fashion, or if the land adjoining Academy Street develops more intensely than currently expected, this segment will require widening within this planning period. If this widening were to occur, it will probably affect the need for the other roads in the eastern part of town.

RECOMMENDED PROJECT LOCATIONS

RECOMMENDED THOROUGHFARE PLAN PROJECTS

1. Academy Street (NC 42 West): widen from Memorial Drive to SR 1106.

2. Holloman Avenue Loop: extend Holloman Avenue from Catherine Street to the proposed Sunbeam Plant Road extension.

3. Holloman Avenue: extension to DT Road.

4. McGlohon Street: extension to the proposed Holloman Avenue Loop.

5. Memorial Drive (US 13, NC 42, and NC 561): widen over Seaboard Coast Line Railroad.

6. Memorial Drive: extension to the proposed Holloman Avenue Loop.

7. Pembroke Avenue: extension to the proposed Holloman Avenue Loop.

8. Sunbeam Plant Road (SR 1105): extension to Boone Road.

9. Sunbeam Plant Road (SR 1105): extension to US 13 South.

10. SR 1106: extension to Boone Road.

11. SR 1453: extension to the proposed US 13 Bypass.

12. US 13 Bypass: new facility from US 13 South, north of the intersection with SR 1418, and US 13 North at SR 1213.

FIGURE 10

RECOMMENDED THOROUGHFARE PLAN PROJECT LOCATIONS

LEGEND

	EXISTING	PROPOSED
MAJOR THOROUGHFARES	———	- - -
MINOR THOROUGHFARES	———	- - -
PROJECT LOCATIONS	00	

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AHOSKIE
AND VICINITY

HERTFORD COUNTY

NORTH CAROLINA

PREPARED BY THE
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS—PLANNING AND RESEARCH BRANCH
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SCALE

AUGUST, 1975

VII. IMPLEMENTATION

One of the key functions of a thoroughfare plan is the guidance it provides the policy and governing boards in formulating and developing their highway system. This stage of planning is generally referred to as implementation and it can be separated into two categories; short range or capital improvements program and a long range program. The capital improvements program is the outline by which highway improvements are selected or staged into construction. Because highway improvement funds generally lag needs, there is little margin for error or little difficulty in developing a capital improvements program. The long range program is more conceptual and difficult to develop. However, the thoroughfare plan offers valuable insights into long range implementation by providing local officials with a forecast of future traffic problems; and, upon adoption by all parties involved, it provides the local officials the legal authority to protect future highway corridors through subdivision regulations and future street line ordinances.

Spiralling construction and right of way costs coupled with inflation and a leveling off of highway improvement revenues are causing serious problems in funding highway construction programs throughout North Carolina. With this in mind, policy and governing boards should take a closer look at their local policies and attitudes toward implementing long range projects to see if they are utilizing to the utmost extent the legislative powers granted them by the North Carolina General Statutes. If present funding deficit trends continue, only by utilizing all the resources available will a municipality be able to afford its citizens a safe and efficient transportation system.

It is the intent of this chapter to briefly discuss current enabling legislation available to local governing boards toward implementing transportation systems in hope that they will be stimulated into both utilizing existing powers and working toward developing additional powers.

State-Municipal Adoption of the Thoroughfare Plan

Chapter 136, Article 3A, Section 136-66.2 of the General Statutes of North Carolina provides that after development of a thoroughfare plan, the plan may be adopted by the governing body of the municipality and the Board of Transportation as the basis for future street and highway improvements. If mutually adopted, negotiations will begin to determine which of the existing and proposed thoroughfares will be a Department of Transportation responsibility and which will be a municipal responsibility. Facilities which are designated as State responsibility will be constructed and maintained

by the Division of Highways; however, the municipality will share in the right of way costs, with the municipality's share of cost to be determined at the time of construction.

After adoption of the thoroughfare plan, a municipality has the legal authority provided by the General Statutes of North Carolina to protect existing and proposed highway corridors through subdivision regulations and future street line ordinances. On highway projects that are designated as State responsibility, the municipality's share of the right of way cost is partially determined by the extent that the municipality has protected the proposed corridor. This has long range implications to a municipality's budget in that right of way cost on unprotected corridors often greatly exceed construction cost.

The 1967 Plan was adopted by the Town of Ahoskie on February 19, 1968, and by the State Highway Commission on April 5, 1968. Following review of this recommended plan and comments from the public hearing May 14, 1985, a mutual adoption of the revised plan is encouraged.

Capital Improvement Program

One of the tools which makes it easier to build a planned thoroughfare system is a capital improvement program. This capital improvement program is composed of two lists of projects: (1) a list of highway projects that are designated a municipal responsibility and are to be implemented with municipal funds; and (2) a list of local projects designated as State responsibility to be submitted to the Department of Transportation as recommendations for inclusion in the "North Carolina Transportation Improvement Program".

The priority groupings in this report should provide a basis on which the Town of Ahoskie can further their capital improvement program. The rebuilding of Catherine Street and the Main Street improvements are examples of the effectiveness of this sort of program. A review of the needs outlined in this report versus the availability of funds will enable the Town to determine if a reevaluation of its policies and funding procedures is necessary.

Administrative Tools

Several administrative controls to aid in the development of the transportation plan have been provided to municipalities through the General Statutes of North Carolina. Several of the more important ones are subdivision regulations, zoning ordinances, future street line ordinances, and urban renewal. These administrative controls offer invaluable aid in the development of the transportation plan. The assistance they provide can vary from getting a new facility completely constructed to only procuring a portion of the

required right of way. A review of the right of way cost for recommended projects in this report emphasizes the benefits obtainable in that right of way costs for projects in developed corridors often greatly increase the total construction cost.

A periodic reexamination of administrative controls are warranted to determine if any revisions should be made in existing controls, procedures, or regulations. Following is a discussion of the more important administrative controls:

Subdivision Controls

The Town of Ahoskie Subdivision Regulations (June 8, 1982), requires that any person within the town limits and its one mile extraterritorial jurisdiction submit preliminary plans for approval to the Ahoskie Planning Commission. This ordinance sets out certain standards which must be met before the subdivider can record the deeds. The existing Ahoskie Subdivision Regulations require that minimum street right-of-way and pavement widths be in accordance with the Thoroughfare Plan within the Corporate Limits, and adhere to minimum NCDOT secondary roads standards outside the Town limits but within the one-mile extraterritorial boundary.

Since many of the proposed thoroughfares are outside the existing Ahoskie Corporate Limits, it is recommended that additional building setbacks on right-of-way reservation conforming to the Thoroughfare Plan also be applied in the extraterritorial jurisdiction area. This will allow for orderly implementation of the plan in the Town's fringe areas without disruption to adjoining land owners.

Streets which may be partially or wholly built through the use of the subdivision ordinance are:

Holloman Avenue Loop,
McGlohon Street Extension,
Memorial Drive Extension,
Pembroke Avenue Extension, and
SR 1453 Extension

Official Street Map

A municipality may, through special enabling legislation, adopt an official street map which indicates both existing and future street lines. No new construction or reconstruction of structures would be permitted within the designated future street lines. This would over a period of time reduce the cost of additional right of way along densely developed thoroughfares which will require widening at some future date.

Facilities which could benefit from an official street map with specified setback distances are:

Academy Street (NC 42 and US 13)
Catherine Creek Road (SR 1415 and SR 1456)
First Street (NC 561)
Memorial Drive

Zoning Ordinance

The Ahoskie zoning ordinances were officially updated in June of 1982. This zoning ordinance will be beneficial to thoroughfare planning in that planned locations of various land uses and planned densities of dwelling units can be realized. This provides a degree of stability on which to make future traffic projections and to plan streets and highways.

Other benefits of this zoning ordinance are: (1) the establishment of standards of development which will aid traffic operations on major thoroughfares; (2) the minimization of strip commercial development which creates traffic friction and increases the traffic accident potential; and (3) the requirement for provision of off-street parking by new developers with the purpose of eventual prohibition of all curb parking on major thoroughfares.

A major goal of the zoning process is to control strip development along major thoroughfares. Measures to minimize driveways and on-street parking should be applied to both existing roadways and new facilities as they develop.

Streets within the planning area that either are experiencing strip development pressures, or that are expected to in the future include:

Academy Street (NC 42 and US 13)
Boone Road (SR 1108)
Catherine Creek Road (SR 1415 and SR 1456)
First Street (NC 561)
Memorial Drive (US 13, NC 42, and NC 561)
NC 561 East
US 13 South and NC 42 East, and
US 13 Bypass

Community Development

Community Development is the term used to describe the removal of blight in cities. It is one of the few tools available for correcting basic mistakes in the existing street pattern.

Community Development is carried out under the framework of the amended New Housing Act of 1974. The basis for the process of urban renewal is carried out under the Community

Development Block Grants Program. Urban renewal consists of a three-fold attack on blight. It calls for the conservation of good areas of the cities, rehabilitation of declining areas, and for clearance of slum areas so that they may be redeveloped to acceptable standards. If a municipality meets certain requirements as to a master plan, city codes and ordinances, and citizen participation, it may obtain assistance in such a program from the Federal Government with the U. S. Government paying three-fourths of the cost of the project.

Portions of the Holloman Avenue Loop lie in areas where urban renewal funds could be used if available.

Municipal Service Districts

Under Chapter 160A, Sections 535-543 of the General Statutes, the legislative body of a municipality may create one or more municipal service districts in a downtown commercial area in order to raise additional funds for physical improvements. One of the stipulated purposes of the district is to facilitiate traffic flow and parking. The district may float a bond issue which would be paid off with revenues from an extra ad valorem tax on all property within the district's boundaries. Once the improvements have been completed and the bonds retired, the extra tax would cease and the district would dissolve.

The business districts of Ahoskie probably could not expect to generate enough revenues for major road construction projects, but projects such as the Main Street improvements and off-street parking provisions may be feasible.

Coordination Between Systems and Project Planning

After approval by the Board of Transportation for local capital improvement projects as additions to the "North Carolina Transportation Improvement Program", indepth project studies will be conducted. As input to these studies, the thoroughfare plan's location and cross section recommendations are used. In instances where indepth project studies develop a recommendation that greatly differs from the thoroughfare plan, the new recommendations shall be analyzed in the context of the thoroughfare plan to determine the system-wide impacts as well as check the feasibility of the recommendation.

VII. SUMMARY

The analysis of the 1967 Thoroughfare Plan conducted for this study showed that plan to still be conceptually sound. The new plan has essentially the same concepts. Only a few minor modifications and expansion of the planning area separates the new from the old.

Growth within the Ahoskie area has been slower than originally anticipated when the 1967 plan was developed, which is why the original plan is still so valid in spite of traffic growth and a more distant design year. Widening of existing streets and operational improvements have been made in a very timely fashion within the area which has delayed the need for major new facilities.

The major new influences on traffic within the area are the NC 11 Bypass and the anticipated commercial area of Fraziers Crossroads. As the "urban" area expands and grows, it is hoped that the thoroughfare plan and recommendations included in this report will provide a safe, efficient transportation system to accommodate this growth.

CL/dc

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APPENDIX A

TRAVEL FORECAST MODELS AND DATA

Base Year (1984) Travel

1984 Internal Trips

Since an internal travel survey was not performed, it was necessary to estimate internal trips. A synthetic model, derived from the model used in the 1965 study, was used to do this. The following general steps describe the method used:

(1) Determination of zonal trip productions based on trip generation rates obtained from home interviews in a similar urban area.

(2) Determination of zonal attraction factors utilizing a multiple regression analysis technique.

(3) Determination of trip distribution utilizing a three purpose gravity model and trip length distribution curves developed in another urban area.

(4) Assignment of traffic to existing network and accuracy checks on the procedures.

Trip Productions

Average trip productions were estimated on a zonal basis in the following categories: (1) trips produced by dwelling units, (2) trips produced by trucks, taxi trips, and (3) trips produced by commercial passenger vehicles. The dwelling unit trip generation rates used were derived from those used in the 1965 study, with adjustments for increasing auto availability and a decrease in the number of persons per dwelling unit within the area. The initial adjustments, when checked, turned out to be high, so the per household generation rates were decreased by a constant value in order to obtain the proper number of trips on the network. The trip generation rates for trucks and commercially owned passenger cars were set at 6.5 trips per vehicles as these were the figures used in the 1965 study. The trip generation rate for taxis was taken to be 40 trips per day based on surveys conducted in other North Carolina towns. Truck, commercially owned auto, and taxi generation rates were held constant over the planning area.

Zonal trip productions were separated into three purposes: home based work (HBW) trips, other home based (OHB) trips, and non-home based (NHB) trips according to the trip distribution percentages used in the 1965 study. The percentages

used were HBW trips 22.53%, OHB trips 53.00%, and NHB trips 24.47%. Dwelling unit trip generation rates were assigned to the traffic zones on the basis of housing conditions.

The total trips generated by dwelling units, trucks, commercial autos and taxis were summed to produce total internally generated trips. This total also included trips that had origins or destinations outside the planning area. Since these trips were external-internal trips which would be distributed to the zones as external trips, they had to be removed from the total to obtain net internal trips.

Once again following the procedure used in the 1965 study, home based trip productions and non-home based trip productions in each zone were reduced by 12.4% before input to the gravity model distribution program. This was the percent of internally generated trips that crossed the external cordon in 1965.

The remaining component of internal trips consists of secondary, non-home based trips produced by vehicles garaged outside the study area.

Traffic crossing the external cordon with trip ends inside the planning area was estimated to produce the same percentage (24.47%), non-home based trips inside the areas as internal traffic. These non-home based trips produced by external traffic were estimated as follows:

$$\text{Trips} = \frac{\text{Total External Trips}}{1.00 - .2477} - \text{Total External Trips}$$

Non-home based trips produced by internal traffic was separated from the home zone and added to the non-home based trips produced by external traffic. The total non-home based trips were then redistributed to the traffic zones on the basis of the trip attraction factors for non-home based trips.

Trip Attractions

Home based work attractions were taken to be the total employment within each zone factored such that the total attractions equaled the total productions. Other home based and non-home based trip attractions were derived from the linear regression model developed from the 1965 external survey. This model relates the relative attractiveness of a zone to the type and density of land use and employment. The equation used was

$$Y = 81.447 + 1.936X_1 + 5.062X_2 + 0.377X_3$$

Where

Y = Attraction Factor,
X_1 = Retail Employment,
X_2 = Hospital Employment,
and X_3 = Other Employment.

The 1984 zonal employment was input to the equation and other home based and non-home based attraction factors for each zone were computed. These factors were then adjusted so that the total attractions for each trip purpose matched the productions.

Trip Distribution

The gravity model trip distribution program was used to distribute internal trips. The principal of the gravity model is that a zone attracts trips in direct proportion to its attraction factor, and in inverse proportion to an exponential function of the distance between it and each other zone. The gravity model is expressed mathematically by the following formula:

$$T_{i-j} = \frac{P_i A_j F_{i-j} K_{i-j}}{\sum_{j=i}^{n} (A_j F_{i-j} K_{i-j})}$$

where

T_{i-j} = trips produced at i and attracted at j;
P_i = total trip production at i;
A_j = total trip attraction at j;
F_{i-j} = calibration term for interchange i-j;
k_{i-j} = socio-economic adjustment factor for interchange i-j;
i = an origin zone number, $i = 1, 2, \ldots, n$;

and

n = number of zones

Input to the gravity model program included the following: (1) zone-to-zone travel times as obtained from a traffic trees computer program utitlizing the existing 1984 major street network, (2) individual zonal trip productions and attractions, and (3) trip length frequency curves for the various trip categories.

The 1965 study used modified trip length frequency curves from an earlier Monroe study. Checks on the maximum trip length applicable for the study area indicated that this trip distribution pattern was still viable. The trip length distribution curves used are shown in Table 1.

APPENDIX A

Table 1

Trip Length Distribution by Trip Purpose

Travel Time (minutes)	Percent Trips Distributed: Home Based Work Trips	Other Home Based Trips	Non-Home Based Trips	External-Internal Trips
1.0	0.00	0.00	0.00	2.00
2.0	1.99	0.72	4.54	3.50
3.0	11.25	11.11	13.71	6.14
4.0	19.59	23.57	25.59	10.69
5.0	23.50	24.47	20.07	16.33
6.0	15.70	16.50	15.22	17.54
7.0	10.05	12.65	8.03	18.94
8.0	9.16	6.48	7.86	11.58
9.0	4.47	2.77	3.12	7.44
10.0	3.31	1.15	1.23	3.33
11.0	0.37	0.30	0.45	2.11
12.0	0.33	0.18	0.18	0.34
13.0	0.28	0.10	0.00	0.06

1984 External and Through Trips

Generally, the base year external traffic movements are obtained from an external cordon origin-destination traffic survey. However, in this study, no such cordon survey was conducted, and due to the completion of the NC 11 Bypass it was felt that some of the patterns exhibited in the 1965 study would no longer be valid. This made it necessary that external and through traffic movements be estimated using a synthetic method. The basic data that were used for this purpose were the traffic counts taken at the external stations and the functional classification of the route.

In 1971, the Planning and Research Department, North Carolina State Highway Commission conducted a study directed toward the development of a procedure that would enable the synthesis of through trip patterns in small urban areas. Based on actual traffic data from ten urban areas, the auther developed a model that would estimate the percentage through trip ends of the ADT at individual cordon stations. The difference between 100 and the percentage through trips ends would give the percentage external trip ends. In 1980, this study was updated[1], and the resulting equations simplified. The mathematical form of the model used is

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[1]Modlin, D. G. Jr., North Carolina Transportation Planning Information System, Technical Report 3: Synthesized Through Trip Table for Small Urban Areas. Raleigh, N.C., October, 1980.

$$Y = 9.29 - 0.00031\ UP + 0.0026\ ADT + 1.48\ TRK$$

where Y = percentage of through trip ends of the ADT at the external station,

UP = urban area population,

ADT = average daily traffic at the external station, and

TRK = percentage of trucks excluding panels and pickups at the external station

The external station locations, traffic volumes, estimated truck percentages, and resulting through trip percentages are given in Table 2.

APPENDIX A

Table 2

External Station Locations and Through Trip Percentages

Station Number	Location	1984 ADT	Estimated Truck %	Through Trip %
50	US 13 N.	4430	17.35	33.40
51	SR 1409	530	12.94	8.54
52	SR 1403	1945	12.94	12.22
53	SR 1424	505	8.37	8.40
54	NC 561 E.	1605	7.36	12.91
55	US 13 S.	4470	13.11	32.68
56	SR 1100	220	12.29	7.72
57	SR 1101	710	12.29	7.81
58	SR 1104	270	11.97	7.84
59	SR 1106	350	11.97	8.05
60	NC 42 W.	2970	11.97	14.86
61	NC 11 S.	2590	38.04	34.75
62	SR 1108	810	9.12	9.21
63	NC 561 W.	3510	9.12	12.05
64	SR 1130	975	14.17	9.71
65	NC 11 N.	2635	37.96	35.10
66	SR 1213	2510	17.35	13.75

The truck percentages on each facility were determined, where possible, from the 1965 external cordon survey. Other values were adapted from those percentages. The resulting number of through and internal-external trips at each station is given in Table 3.

APPENDIX A

Table 3

1984 Through and Internal-External Trips

Station Number	Through Trip %	Through Trips	Internal-External Trips	Total Trips (ADT)
50	33.40	1480	2950	4430
51	8.54	45	485	530
52	12.22	240	1705	1945
53	8.40	40	465	505
54	12.91	205	1400	1605
55	32.68	1460	3010	4470
56	7.72	15	205	220
57	7.81	55	655	710
58	7.84	20	250	270
59	8.05	30	320	350
60	14.86	440	2530	2970
61	34.75	900	1690	2590
62	9.21	70	740	810
63	12.05	420	3090	3510
64	9.71	95	880	975
65	35.10	925	1710	2635
66	13.75	345	2165	2510
TOTALS	21.88	6790	24245	31035

External Trips

External trip productions were set equal to the total amount of internal-external trips at that station. The zonal attractions were derived from the regression equation discussed earlier. The unadjusted zonal attractions were factored to match the total number of trips produced at the external stations. These trips were distributed to the individual zones by use of the Gravity Model again using a trip length distribution adopted from the earlier Monroe study.

Through Trips

The through trips were distributed to the various external stations through the use of Modlin's synthetic equations developed earlier. The equations used vary according to road functional class. The equation for each classification and the facilities to which they were applied are as follows:

PRINCIPAL ARTERIAL (US 13, North and South)

$$Y = -7.40 + 0.55\ PTTDES + 24.68\ RTECON + 45.62\ ADT/CD$$

MINOR ARTERIAL (NC 11 Bypass)

$$Y = -0.63 + 86.68\ ADT/CD + 30.04\ RTECON$$

MAJOR COLLECTOR (NC 42 West, and NC 561 East and West)

$$Y = -1.08 + 0.00079\ DESADT + 0.47\ PTKDES + 31.78\ ADT/CD$$

MINOR COLLECTOR OR LOCAL (SR 1100, SR 1101, SR 1104, SR 1106, SR 1108, SR 1130, SR 1213, SR 1403, SR 1409, and SR 1424)

$$Y = -0.40 + 109.42\ ADT/CD$$

where,

PTTDES = percentage through trip ends at destination station
RTECON = route continuity; 1 = yes, 0 = no
ADT/CD = average daily traffic at destination station divided by the sum of the average daily traffic at all stations
DESADT = average daily traffic at destination station, and
PTKDES = percentage of trucks excluding panels and pickups at the destination station.

These equations allowed the development of a set of station-to-station trip table interchange factors which through a reiterative process, adjusted to the through trip volumes at the external stations to create a through trip table. This resultant through trip table is given in Table 4.

The resulting internal, external, and through trip tables were then combined and assigned to the existing (1984) major street network. Routings for the trips were assigned along minimim time paths between zones.

APPENDIX A
TABLE 4

AHOSKIE 1984 STATION TO STATION THROUGH TRIP MOVEMENT

EXTERNAL STATIONS

	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
50	0																
51	3	0															
52	34	1	0														
53	3	0	2	0													
54	18	2	5	2	0												
55	450	1	14	2	7	0											
56	0	0	0	0	2	0	0										
57	3	1	2	0	2	2	0	0									
58	1	0	0	0	2	0	0	0	0								
59	1	0	1	0	3	0	0	0	0	0							
60	67	3	10	3	8	28	3	4	3	4	0						
61	20	3	15	2	14	82	0	4	0	1	0	0					
62	4	1	2	0	3	2	0	0	0	0	6	6	0				
63	56	3	6	3	7	24	2	4	3	3	16	38	0	0			
64	5	1	3	0	4	3	0	0	0	0	13	8	0	2	0		
65	45	3	15	2	14	83	0	4	1	1	30	225	7	27	5	0	
66	30	2	10	2	10	32	0	3	1	1	22	32	4	19	4	0	0
TOTALS	740	24	120	21	103	730	7	29	11	15	220	450	35	213	48	462	172

TOTAL THROUGH TRIP ENDS – 3400

Accuracy Checks

The ability of the model to accurately represent Ahoskie area travel patterns was checked by means of two tests. Three screenlines were drawn bisecting the planning area (see Figure 3), screenline A runs north-south while screenlines B and C run east-west. The total model assigned volume crossing these lines was compared to the actual total ground counts taken on every street crossing the screenline. This is an analysis of interarea travel. That is, it is a test of the model's ability to predict the trip movement through the planning area regardless of the paths chosen. Not all of the streets crossing the screenlines were modelled, although most major crossings were. As stated earlier, the first run through the modelling process, when checked by this procedure, indicated that too many trips were being produced by the model. As the through trip and external-internal trip production were fixed by the actual traffic counts at the external stations, the internal generation rates were adjusted downward to allow a more accurate model to be developed. Table 5 shows the screenline accuracy test results from the second model developed utilizing the internal trip generation rates shown in Appendix A, Table 7.

APPENDIX A

Table 5

1984 Ahoskie Screenline Comparisons

	Modelled Links			All Crossings	
Screenline	Assigned Volume	Ground Count	Percent Difference	Ground Count	Percent Difference
A	25,223	24,840	+1.54	26,225	-3.82
B and C	29,206	22,235	+31.35	26,225	+11.37

Table 5 gives an indication that the zone to zone trip movements are being accurately represented by the model, but doesn't give any indication that the portion of the model representing the transportation system (i.e. the existing street network), is accurately represented. Table 6 is an analysis of how well these interzonal trips, when loaded on the street network model match the actual traffic counts taken on those streets. The percent deviation on each link with a corresponding traffic count was calculated by the following formula:

$$\frac{\text{(Test Load-Ground Count)}}{\text{Ground Count}}$$

There are some calibration problems in utilizing a modelling process designed for cities of 50,000 population or greater, to an area of Ahoskie's size. From a traffic modelling standpoint if the difference between the test load and the actual ground count is 1000 or 2000 it is not likely to present any problems in analyzing the adequacy of the street system; however, in the 0-2499 volume grouping this would represent a very large percent deviation. In the 7000 and over volume grouping the percent deviation would be much smaller for the same error. This explains why the average percent deviation decreases as the base volume increases.

A summary of this comparison of model assigned traffic to the actual 1984 ground counts by volume groupings is given in Table 6. Given the size of the study area, and the low volumes on much of the street network, the results of the comparisons in Tables 5 and 6 are considered well within acceptable limits for transportation planning.

APPENDIX A

Table 6

Comparison of Model Assigned Traffic to Ground Counts

Volume Group	Number of Observations	Average Ground Count	Average Assigned Volume	Average Percent Deviation
1-2499	41	1080	1537	48.51
2500-7000	22	4628	4656	13.77
Over 7000	12	9882	9466	11.83

2005 Internal Trips

The year 2005 internal travel patterns were estimated by projecting the same socio-economic data used to estimate the 1984 travel patterns.

Dwelling unit trip generation rates for 2005 were determined by increasing the 1984 rates uniformly by an amount equal to the anticipated percentage growth in auto ownership within the area and decreases in dwelling unit occupancy rates and vehicle usage. The 1984 average trip generation rate (7.75 trips/DU) is expected to increase by approximately 13 percent by the year 2005. The increase was obtained by the method shown below.

The auto ownership factor is based on a projected change in the Hertford County persons per auto ratio from 1.70 in 1984 to 1.37 in the year 2005 (see Figure A-1). When divided, the auto availability factor is as follows:

$$\frac{\text{1984 persons per auto}}{\text{2005 persons per auto}} = \frac{1.70}{1.37} = 1.27$$

The decreasing dwelling unit occupancy factor is similarly derived:

$$\frac{\text{2005 persons per DU}}{\text{1984 persons per DU}} = \frac{2.42}{2.60} = 0.93$$

The uniform rate increase factor was then derived as follows:

auto ownership factor (1.27) x persons per DU factor (0.93) x an auto usage factor (0.99) = 1.17

The increase in the number of trips generated per dwelling unit (DU) which was added to the individual 1984 generation rates was determined by subtracting the 1984 overall generation rate from the newly determined 2005 overall rate:

$$\begin{aligned} \text{Uniform Increase} &= (7.35 \times 1.17) - 7.35 \\ &= 8.60 - 7.35 \\ &= 1.25 \end{aligned}$$

The computer system that generates the per household trip generation only allows values to the tenth. It was determined to increase the better household categories generation rates by 1.2 trips and the lower categories by 1.3 trips per DU. The 1984 and 2005 generation rates used are shown in Table 7.

APPENDIX A

Table 7

1984 and 2005 Ahoskie Trip Generation Rates

Housing Type	1984 Generation Rate	Increase Factor	2005 Generation Rate
Excellent	13.8	1.2	15.0
Above Average	8.6	1.2	9.8
Average	8.5	1.2	9.7
Below Average	5.9	1.3	7.2
Poor	4.4	1.3	5.7

Based on the year 2005 planning area population projection, and the anticipated occupancy rate of 2.42 persons per dwelling unit, there will be 3800 occupied dwelling units within the planning area in the design year. This will require not only the construction of 915 new homes within the area, but also require that all existing dwelling units lost for various reasons be replaced. These additional dwelling units were distributed to the varous zones based on current building trends and to areas where development was considered likely. The design year trip generation rates were then applied to the dwelling units within each zone.

The year 2005 trip generation rates for trucks and commercially owned passenger cars has been assumed to remain at 6.5 trips per vehicle. As opposed to auto driver trips which have been related to the dwelling unit, truck and commerical car trips are generated by the vehicle. Future truck and commercially owned passenger car trips were obtained directly through a forecast of the registrations of these two classes of vehicles. The number of commercial vehicles garaged in the planning area in the year 2005 was determined by assuming that the ratio of trucks and commercial autos to employment (0.174) would remain constant throughout the planning period. On the basis of the projected planning area employment, it is estimated that the number of commercially owned autos in the planning area will grow from 184 in 1984 to 225 in the year 2005, and the number of trucks is expected to increase from 442 to 540. These new vehicles were assigned to the planning area zones roughly based on one new vehicle to every five new employees per zone.

Taxi projections were made based on the assumption that the number of taxis within the area would be proportional to the planning area population. The formula for determining the design year number of taxis is

$$\text{2005 taxis} = \frac{\text{2005 population}}{\text{1984 population}} \times \text{1984 taxis}$$

thus for the Ahoskie area:

$$\text{2005 taxis} = \frac{9200}{7500} \times 3 \text{ taxis}$$

2005 taxis = 4

These taxis were then assigned to the zone with the existing cab company.

The percentage breakdown of internal trips by purpose and the percentage of non-home based trips generated by external traffic were assumed to remain constant over the planning period and were thus duplicated from the 1984 values.

Trip attraction factors for the other home based and non-home based trip purposes were determined by the input of the projected 2005 zonal employment data into the regression equation developed from the 1965 external cordon traffic survey. The trip attraction factors for home based work trips were taken to be the total projected employment in each zone. The 2005 distribution of employment shown in text Table 5, was based on existing land use patterns and advice from the Ahoskie Planning Board, local officials, and other interested citizens. As was done in the base year, these attraction factors were adjusted to match the total productions previously determined for each purpose.

2005 External and Through Trips

Historic traffic counts and anticipated land use growth at or near the 1984 external stations were used to project the design year 2005 traffic volumes at the external stations. Due to its recent construction, historical count data is very limited on the NC 11 Bypass. Projections made for the project report, based on historical trends along the regional corridor were used as a guide toward projecting these volumes. Selected historical counts where available and the resulting traffic projections at the external stations are given in Table 8.

APPENDIX A

Table 8

Historical and Projected Traffic Volumes at the External Stations

Station Number	Location	Average Daily Traffic							
		1970	1974	1977	1979	1981	1983	1984[a]	2005
50	US 13 N.	3650	3900	4400	4900	3300	3500	4430	7000
51	SR 1409	N/A	N/A	350	N/A	N/A	N/A	530	1000
52	SR 1403	1030	800	1150	1750	N/A	1600	1945	4000
53	SR 1424	210	580	N/A	470	500	500	505	1500
54	NC 561 E.	1000	1100	N/A	N/A	N/A	N/A	1605	3000
55	US 13 S.	3650	3900	4700	4700	4500	5300	4470	7400
56	SR 1100	330	350	340	450	320	250	220	500
57	SR 1101	500	550	770	790	N/A	N/A	710	1200
58	SR 1104	N/A	N/A	250	230	370	350	270	600
59	SR 1106	220	350	250	330	260	250	350	800
60	NC 42 W.	2350	3600	N/A	N/A	2900	2900	2970	6000
61	NC 11 S.	N/A	N/A	N/A	N/A	1600	1800	2590	6000
62	SR 1108	600	600	1050	1090	750	600	810	2600
63	NC 561 W.	2100	3000	3150	3300	2700	2900	3510	8000
64	SR 1130	740	1100	1400	N/A	N/A	N/A	975	1800
65	NC 11 N.	N/A	N/A	N/A	N/A	140	N/A	2635	6000
66	SR 1213	1450	2300	2000	2500	2200	2200	2510	4500

[a]Counts taken for thoroughfare plan update study
N/A - information not available

The percentage of through trips at each external station was taken to be the percentage used in the 1984 study. The resulting through and external-internal trip ends at each station are given in Table 9.

APPENDIX A

Table 9

2005 External and Through Trip Ends at the External Stations

Station Number	Through Trip Percentage	Projected ADT	External Trip Ends	Through Trip Ends
50	33.40	7000	4662	2338
51	8.54	1000	915	85
52	12.22	4000	3511	489
53	8.40	1500	1374	126
54	12.91	3000	2613	387
55	32.68	7400	4982	2418
56	7.72	500	461	39
57	7.81	1200	1105	95
58	7.84	600	553	47
59	8.05	800	736	64
60	14.86	6000	5108	892
61	34.75	6000	3915	2085
62	9.21	2600	2361	239
63	12.05	8000	7036	964
64	9.71	1800	1625	175
65	35.10	6000	3894	2106
66	13.75	4500	3881	619
TOTALS	21.88	61900	48732	13168

The design year external-internal trips were distributed by use of the gravity model technique as was done for the base year model. The design year through trips were distributed based on the 1984 distribution by use of FRATAR trip balancing program.

The resulting trip tables were then combined with the internal trip tables to completely model the projected travel demands. This total trip table was assigned to the existing street network, the 1967 thoroughfare plan, and various alternative plans in order to provide a basis for determining travel service capabilities of the different systems.

Tables 10 and 11 are the 1984 internal data summary and the resulting trip productions and attractions. Tables 12 and 13 are the design year 2005 internal data summary and productions and attractions by trip purpose.

APPENDIX A
TABLE 10

1984 INTERNAL DATA SUMMARY

ZONE	DWELLING UNITS CONDITION						SPECIAL VEHICLES			UNADJ	UNADJ
	EXC	AAV	AVG	BAV	LOW	SPE	TRUCKS	COMM AUTOS	TAXIS	WORK ATTRS	OTHER ATTRS
1	2	10	17	4			18	42		378	261
2		9	62	15				5		107	148
3	21	30	34	25				2		3	83
4		7	113	19			2	2		86	207
5	23	72	67	10			47	7		119	173
6		1	9	25	72		11	11	3	61	128
7		1	19	51	2		7	2		115	221
8	1	3	22	33	5		18	2		232	280
9			23	123	33		38	16		230	424
10			46	29	1		40	10		356	594
11	1		78	73	2		39	12		341	439
12		1	20	24			1			3	83
13		15	21	5	1		3	3		308	1639
14	3	53	65	1							81
15	4	21	117	36						81	112
16		1	25	22	7		7	1		14	91
17		3	33	44	7					1	82
18		3	34	59	29					44	107
19		5	23	8							81
20			23	28	16						81
21		1	18	21	1		11	2		99	119
22		4	2	2	1						81
23										2	85
24	1		5	2	1		25	13		124	198
25			4	3	3					2	85
26			22	83	1		63	7		93	194
27		2	25	25	6					2	84
28			1	2	3						81
29			26	32	5		2			4	83
30			1		4			2		392	229
31			8	6	3			2		38	96
32		6	34	20	10		20	37		169	234
33			10	11	11		13	1		27	124
34			10	44	2			1		8	84
35			2								81
36	3	3	2	2							81
37	6	36	21	7	1					82	117
38		1	14	27	15		50			21	111
39		2	9	13	1		27	4		55	126
40		8	75	20	4						81
41			35	26	9						81
42		1	78	33	19					2	85
TOTAL	65	299	1253	993	275		442	184	3	3599	7855

APPENDIX A
TABLE 11

1984 TRIP PRODUCTIONS AND ATTRACTIONS

ZONE	INTRL TRIPS	HOME WORK TRIPS	OTHER HOME TRIPS	NON HOME INTRL	NON HOME EXTRL	ADJST WORK ATTRS	ADJST OTHER ATTRS	ADJST NON-H ATTRS
1	592	136	314	142		540	394	439
2	639	147	339	153		153	223	249
3	878	202	465	211		4	125	140
4	1020	235	541	245		123	312	348
5	1687	388	894	405		170	261	291
6	717	165	380	172		87	193	215
7	475	109	252	114		164	333	372
8	505	116	268	121		331	422	471
9	1248	287	661	300		328	639	713
10	784	180	416	188		508	896	999
11	1275	293	676	306		487	662	738
12	289	66	153	69		4	125	140
13	336	77	178	81		440	2472	2757
14	929	214	492	223			122	136
15	1270	292	673	305		116	169	188
16	384	88	204	92		20	137	153
17	526	121	279	126		1	124	138
18	696	160	369	167		63	161	180
19	252	58	134	60			122	136
20	379	87	201	91			122	136
21	330	76	175	79		141	179	200
22	59	14	31	14			122	136
23						3	128	143
24	282	65	149	68		177	299	333
25	57	13	30	14		3	128	143
26	897	206	475	215		133	293	326
27	356	82	189	85		3	127	141
28	30	7	16	7			122	136
29	392	90	208	94		6	125	140
30	35	8	19	8		560	345	385
31	114	26	60	27		54	145	161
32	769	177	408	185		241	353	394
33	255	59	135	61		39	187	209
34	318	73	169	76		11	127	141
35	15	3	8	4			122	136
36	84	19	45	20			122	136
37	543	125	288	130		117	176	197
38	597	137	316	143		30	167	187
39	332	76	176	80		79	190	212
40	742	171	393	178			122	136
41	432	99	229	104			122	136
42	837	193	444	201		3	128	143
TOTAL	22357	5140	11852	5364	7855	5139	11843	13210

TRIP PERCENTAGE	
INTERNAL OF TOTAL	88
HOME BASED WORK OF INTERNAL	23
OTHER HOME BASED OF INTERNAL	53
NON HOME BASED OF INTERNAL	24

APPENDIX A
TABLE 12

2005 INTERNAL DATA SUMMARY

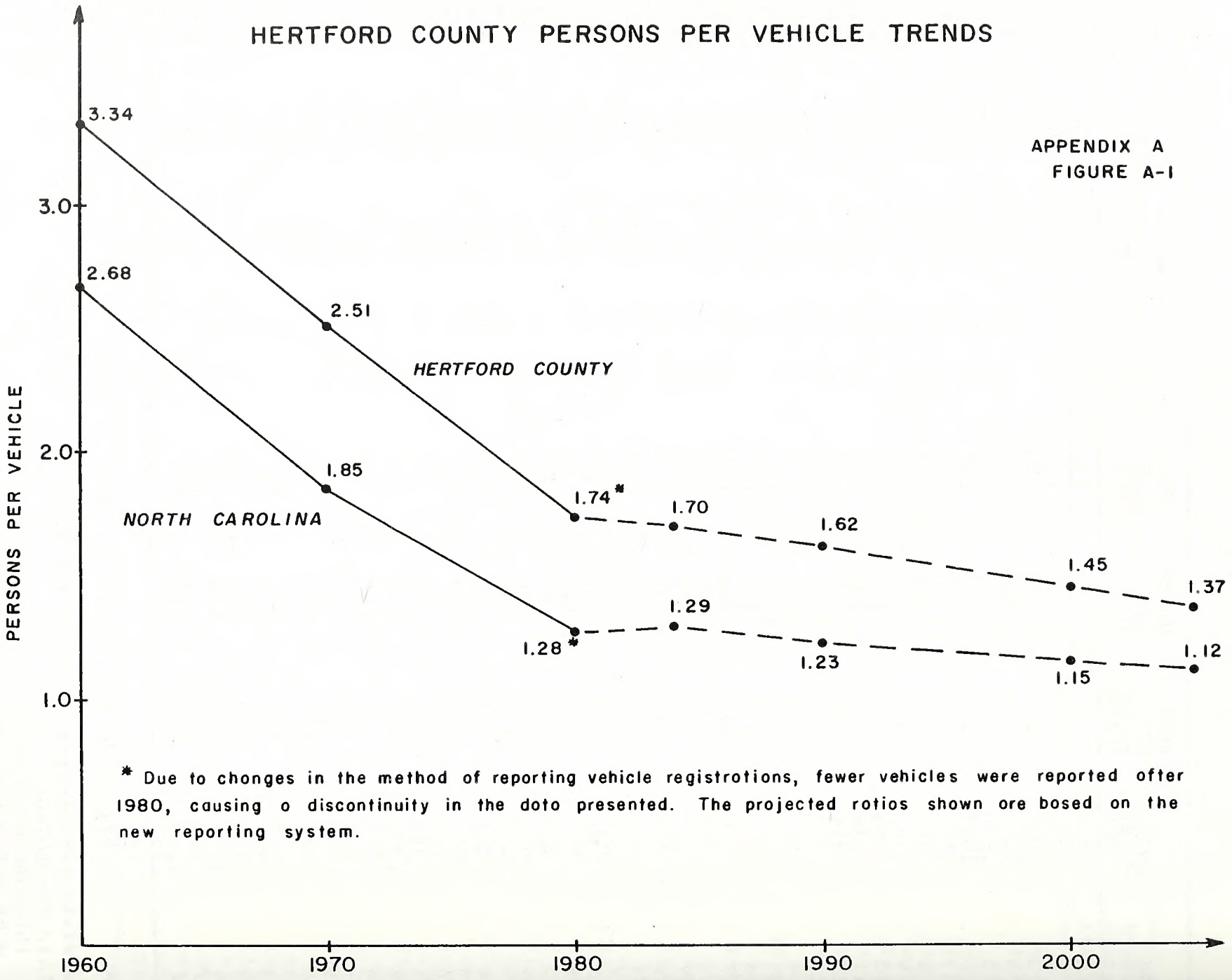
ZONE	DWELLING UNITS CONDITION EXC	AAV	AVG	BAV	LOW	SPE	SPECIAL VEHICLES TRUCKS	COMMR AUTOS	TAXIS	UNADJ WORK ATTRS	UNADJ OTHER ATTRS
1	2	10	17	4			18	42		378	261
2		9	62	15				5		107	148
3	21	30	34	25				2		3	83
4		9	124	20			3	3		96	227
5	23	72	67	10			47	7		119	173
6		1	12	31	91		11	11	4	61	128
7		1	19	51	2		7	2		115	221
8	1	3	17	26	4		24	2		262	291
9			24	128	34		38	16		230	424
10			54	35	1		52	12		426	683
11	2		81	76	2		42	13		362	463
12		1	20	24			1			3	83
13		15	61	8	1		4	4		426	2014
14	6	76	82	1							81
15	7	27	168	48				2		92	116
16		1	37	33	12		7	1		14	91
17		3	38	52	8					1	82
18		3	40	66	37					44	107
19		5	44	30							81
20			35	71	33						81
21		1	27	55	1		16	3		129	130
22		4	14	33	1		1	1		10	101
23							11	3		72	112
24	1		5	2	1		29	15		154	210
25			6	8	3					2	85
26			22	63	1		72	9		148	254
27		2	28	28	7					2	84
28			3	7	10		11	3		70	108
29			32	46	6		14	2		77	115
30			1		4		2	14		462	256
31			18	16	4			2		38	96
32		6	63	33	11		24	43		209	311
33			10	11	11		13	1		27	443
34			10	44	2			1		8	84
35			8	1						3	87
36	10	37	31	4			4	1		25	130
37	13	66	48	14	2					82	117
38		1	26	47	26		57			56	163
39		2	9	13	1		27	4		55	126
40		8	109	27	6						81
41			51	47	15		3	1		20	105
42		1	93	55	25		2			12	105
TOTAL	86	394	1650	1308	362		540	225	4	4400	9141

APPENDIX A
TABLE 13

2005 TRIP PRODUCTIONS AND ATTRACTIONS

ZONE	INTRL TRIPS	HOME WORK TRIPS	OTHER HOME TRIPS	NON HOME INTRL	NON HOME EXTRL	ADJST WORK ATTRS	ADJST OTHER ATTRS	ADJST NON-H ATTRS
1	627	144	332	150		657	503	678
2	730	168	387	175		186	285	385
3	996	229	528	239		5	160	216
4	1298	299	688	312		167	438	590
5	1870	430	991	449		207	334	450
6	1031	237	546	247		106	247	333
7	555	128	294	133		200	426	574
8	517	119	274	124		455	561	756
9	1496	344	793	359		400	817	1102
10	1054	242	559	253		740	1317	1775
11	1524	351	808	366		629	893	1203
12	338	78	179	81		5	160	216
13	752	173	399	180		740	3883	5234
14	1441	331	764	346			156	211
15	2076	477	1100	498		160	224	301
16	641	147	340	154		24	175	237
17	720	166	382	173		2	158	213
18	971	223	515	233		76	206	278
19	609	140	323	146			156	211
20	914	210	484	219			156	211
21	702	161	372	168		224	251	338
22	381	88	202	91		17	195	262
23	81	19	43	19		125	216	291
24	326	75	173	78		268	405	546
25	117	27	62	28		3	164	221
26	1056	243	560	253		257	490	660
27	470	108	249	113		3	162	218
28	201	46	107	48		122	208	281
29	686	158	364	165		134	222	299
30	121	28	64	29		803	494	665
31	287	66	152	69		66	185	250
32	1238	285	656	297		363	600	808
33	291	67	154	70		47	854	1151
34	380	87	201	91		14	162	218
35	75	17	40	18		5	168	226
36	771	177	409	185		43	251	338
37	1250	288	663	300		143	226	304
38	985	227	522	236		97	314	424
39	360	83	191	86		96	243	327
40	1199	276	635	288			156	211
41	832	191	441	200		35	202	273
42	1288	296	683	309		21	202	273
TOTAL	33257	7649	17629	7978	15788	7645	17625	23758

TRIP PERCENTAGE	
INTERNAL OF TOTAL	88
HOME BASED WORK OF INTERNAL	23
OTHER HOME BASED OF INTERNAL	53
NON HOME BASED OF INTERNAL	24



* Due to chonges in the method of reporting vehicle registrotions, fewer vehicles were reported ofter 1980, causing o discontinuity in the doto presented. The projected rotios shown ore bosed on the new reporting system.

APPENDIX B

RECOMMENDED DEFINITIONS AND DESIGN STANDARDS FOR SUBDIVISION ORDINANCES

DEFINITIONS:

I. Streets and Roads:

A. Rural Roads

1. Principal Arterial - A rural link in a network of continuous routes serving corridor movements having trip length and travel density characteristics indicative of substantial statewide or interstate travel and existing solely to serve traffic. This network would consist of Interstate routes and other routes designated as principal arterials.

2. Minor Arterial - A rural link in a network joining cities and larger towns and providing intrastate and intercounty service at relatively high overall travel speeds with minimum interference to through movement.

3. Major Collector - A road which serves major intracounty travel corridors and traffic generators and provides access to the Arterial system.

4. Minor Collector - A road which provides service to small local communities and links the locally important traffic generators with their rural hinterland.

5. Local Road - A local road that serves primarily to provide access to adjacent land and for travel over relatively short distances.

B. Urban Streets

1. Major Thoroughfares - Major thoroughfares consist of Interstate, other freeway, expressway, or parkway links, and major streets that provide for the expeditious movement of high volumes of traffic within and through urban areas.

2. Minor Thoroughfares - Minor thoroughfares are important streets in the city system and perform the function of collecting traffic from local access streets and carrying it to the major thoroughfare system. Minor thoroughfares may be used to supplement the major thoroughfare system by facilitating a minor through-traffic movement and may also serve abutting property.

3. Local Street - A local street is any link not on a higher-order urban system and serves primarily to provide direct access to abutting land and access to higher systems.

C. Specific Type Rural or Urban Streets

1. Freeway, expressway, or parkway - Divided multilane roadways designed to carry large volumes of traffic at relatively high speeds. A freeway is a divided highway providing for continuous flow of vehicles with no direct access to abutting property or streets and with access to selected crossroads provided via connecting ramps. An expressway is a divided highway with full or partial control of access and generally with grade separations at major intersections. A parkway is a highway for noncommercial traffic, with full or partial control of access, and usually located within a park or a ribbon of parklike development.

2. Residential Collector Street - A local access street which serves as a connector street between local residential streets and the thoroughfare system. Residential collector streets typically collect traffic from 100 to 400 dwelling units.

3. Local Residential Street - Cul-de-sacs, loop streets less than 2,500 feet in length, or streets less than one mile in length that do not connect thoroughfares, or serve major traffic generators, and do not collect traffic from more than 100 dwelling units.

4. Cul-de-sac - A short street having but one end open to traffic and the other end being permanently terminated and a vehicular turn around provided.

5. Frontage Road - A local street or road that is parallel to a full or partial access controlled facility and functions to provide access to adjacent land.

6. Alley - A strip of land, owned publicly or privately, set aside primarily for vehicular service access to the back side of properties otherwise abutting on a street.

II. Property

A. Building Setback Line - A line parallel to the street in front of which no structure shall be erected.

B. Easement - A grant by the property owner for use by the public, a corporation, or person(s), of a strip of land for a specific purpose.

C. Lot - A portion of a subdivision, or any other parcel of land, intended as a unit for transfer of ownership or for development or both. The word "lot" includes the words "plat" and "parcel".

1. Corner Lot - A lot abutting upon two streets at their intersection.

2. Double-Frontage Lot - A continuous (through) lot which is accessible from both of the parallel streets upon which it fronts.

3. Reverse-Frontage Lot - A continuous (through) lot which is accessible from only one of the parallel streets upon which it fronts.

III. Subdivision

A. Subdivider - Any person, firm, corporation or official agent thereof, who subdivides or develops any land deemed to be a subdivision.

B. Subdivision - All divisions of a tract or parcel of land into two or more lots, building sites, or other divisions for the purpose, whether immediate or future, of sale or building development, and all divisions of land involving the dedication of a new street or a change in existing streets; provided, however, that the following shall not be included within this definition nor subject to these regulations: (1) the combination or recombination of portions of previously platted lots where the total number of lots is not increased

and the resultant lots are equal to or exceed the standards contained herein; (2) the division of land into parcels greater than ten acres where no street right-of way dedication is involved; (3) the public acquisition by purchase of strips of land for the widening or opening of streets; (4) the division of a tract in single ownership whose entire area is no greater than two acres into not more than three lots, where no street right-of-way dedication is involved and where the resultant lots are equal to or exceed the standards contained herein.

C. Dedication - A gift, by the owner, of his property to another party without any consideration being given for the transfer. Since a transfer of property is involved, the dedication is made by written instrument and is completed with an acceptance.

D. Reservation - A reservation of land does not involve any transfer of property rights. It simply constitutes an obligation to keep property free from development for a stated period of time.

Design Standards

I. Streets and Roads:

The design of all streets and roads within _____ shall be in accordance with the accepted policies of the North Carolina Department of Transportation, Division of Highways, as taken or modified from the American Association of State Highway Officials' (AASHO) manuals.

The provision of street rights-of-way shall conform and meet the requirements of the thoroughfare plan for _____ as adopted by the _____ and the North Carolina Department of Transportation.

The proposed street layout shall be coordinated with the existing street system of the surrounding area. Normally the proposed streets should be the extension of existing streets if possible.

The urban planning area shall consist of that area within the urban planning boundary as depicted on the mutually adopted _____ Thoroughfare Plan. The rural planning area shall be that area outside the urban planning boundary.

A. Right-of-Way Widths: Right-of-way widths shall not be less than the following and shall apply except in those cases where right-of-way requirements have been specifically set out in the Thoroughfare Plan.

	Min. Right of Way, Ft.
1. Rural	
a. Principal Arterial	
Freeways	350
Other	200
b. Minor Arterial	100
c. Major Collector	100
d. Minor Collector	100
e. Local Road	*60

*The desirable minimum right-of-way is 60 feet. If curb and gutter is provided, 50 feet of right-of-way is adequate on local residential streets.

		Min. Right of Way, Ft.
2.	Urban	
a.	Major Thoroughfare Other than Freeway and Expressway	90
b.	Minor Thoroughfare	70
c.	Local Street	*60
d.	Cul-de-sac	**Variable

The subdivider will only be required to dedicate a maximum of 100 feet of right-of-way. In cases where over 100 feet of right-of-way is desired, the subdivider will be required only to reserve the amount in excess of 100 feet. In all cases in which right-of-way is sought for an access controlled facility, the subdivider will only be required to make a reservation.

A partial width right-of-way, not less than sixty (60) feet in width, may be dedicated when adjoining undeveloped property that is owned or controlled by the subdivider; provided that the width of a partial dedication be such as to permit the installation of such facilities as may be necessary to serve abutting lots. When the said adjoining property is subdivided, the remainder of the full required right-of-way shall be dedicated.

B. Street Widths: Widths for street and road classifications other than local shall be as required by the Thoroughfare Plan. Width of local roads and streets shall be as follows:

1. Local Residential
   Curb and gutter section 26 feet, to face of curb
   Shoulder section - 20 feet to edge of pavement, 4 foot shoulders

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*The desirable minimum right-of-way is established as 60 feet. If curb and gutter is provided, 50 feet of right-of-way is adequate.

**The right-of-way dimension will depend on radius used for vehicular turn-around. Distance from edge of pavement of turn around to right-of-way should not be less than distance from edge of pavement to right-of-way on street approaching turn-around.

2. Residential Collector
   Curb-and-gutter section 34 feet, face to face of curb
   Shoulder section 20 feet to edge of pavement, 6 foot shoulders

C. Geometric Characteristics: The standards outlined below shall apply to all subdivision streets proposed for addition to the State Highway System or Municipal Street System. In cases where a subdivision is sought adjacent to a proposed thoroughfare corridor, the requirements of dedication and reservation discussed under Right-of-Way shall apply.

1. Design Speed

The design speeds for subdivisions type streets shall be:

	Desirable	(Minimum)		
		Level	Rolling	Mountainous
Rural				
Minor Collector Roads	60	(50)	(40)	(30)
Local Roads including Residential Collectors and Local Residential	50	(50)*	(40)*	(30)*
Urban				
Major Thoroughfares Other than Freeway or Expressway	60	(50)	(50)	(50)
Minor Thoroughfares	60	(50)	(40)	(40)
Local Streets	40	(40)**	(30)**	(20)**

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*Based on projected annual average daily traffic of 400-750. In cases where road will serve a very limited area and small number of dwelling units, minimum design speeds can be reduced further.

**Based on projected annual average daily traffic of 50-250.

2. Maximum and Minimum Grades

a. The maximum grades in percent shall be:

Design Speed	Level	Rolling	Mountainous
60	3	4	6
50	4	5	7
40	5	6	8
30		9	10
20			12

b. A minimum grade for curbed streets normally should not be less than 0.5%, a grade of 0.35% may be allowed where there is a high type pavement accurately crowned and in areas where special drainage conditions may control.

c. Grades for 100 feet each way from intersections should not exceed 5%.

d. For streets and roads with projected annual average daily traffic less than 250, short grades less than 500 feet long, may be 150% greater.

3. Minimum Sight Distances

In the interest of public safety, no less than the minimum sight distance applicable shall be provided in every instance. Vertical curves that connect each change in grade shall be provided and calculated using the following parameters. (General practice calls for vertical curves to be multiples of 50 feet. Calculated lengths shall be rounded up in each case.):

Design Speed, MPH	20	30	40	50	60
Stopping Sight Distance -					
Min. Distance, Ft.	150	200	275	350	475
Des. Distance, Ft.	150	200	300	450	650
Min. K* Value For:					
Min. Crest Curve	16	28	55	85	160
Des. Crest Curve	16	28	65	145	300
Min. SAG Curve	24	35	55	75	105
Des. SAG Curve	24	35	60	100	155
Passing Sight Distance -					
Min. Passing Distance, Feet (2 lane)		1100	1500	1800	2100
Min. K* Value For Crest Vertical Curve		365	686	985	1340

Sight distance provided for stopped vehicles at intersections should be in accordance with, "A Policy on Geometric Design of Rural Highways".

4. The following table shows the maximum degree of curve and related maximum superelevation for design speeds. The maximum rate of roadway superelevation (e) for rural roads wth no curb and gutter is .08. The maximum rate of superelevation for urban streets with curb and gutter is .06 with .04 being desirable.

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*K is a coefficient by which the algebraic difference in grade may be multiplied to determine the length in feet of the vertical curve which will provide minimum sight distance.

Design Speed MPH	Maximum e*	Minimum Radius (Rounded) Feet	Maximum Degree of Curve (Rounded) Degrees
20	.04	125	45.0
30	.04	300	19.0
40	.04	560	10.0
50	.04	925	6.0
60	.04	1410	4.0
20	.06	115	50.0
30	.06	275	21.0
40	.06	510	11.5
50	.06	830	7.0
60	.06	1260	4.5
20	.08	110	53.5
30	.08	250	23.0
40	.08	460	12.5
50	.08	760	7.5
60	.08	1140	5.0

*e = rate of roadway superelevation, foot per foot

D. Intersections

1. Streets shall be laid out so as to intersect as nearly as possible at right angles, and no street should intersect any other street at an angle less than sixty (60) degrees.

2. Property lines at intersections should be set so that the distance from the edge of pavement, of the street turnout, to the property line will be at least as great as the distance from the edge of pavement to the property line along the intersecting streets. This property line can be established as a radius or as a sight triangle. Greater offsets from the edge of pavement to the property lines will be required, if necessary, to provide sight distance for the stopped vehicle on the side street.

3. Off-set intersections are to be avoided unless exception is granted by the Divison of Highways for intersections involving the State Highway System, or the Planning Board for intersections involving only the municipal street system. Intersections which cannot be aligned should be separated by a minimum length of 200 feet between survey centerlines.

E. Cul-de-sacs

Cul-de-sacs, unless exception is granted by the local planning board, shall not be more than five hundred (500) feet in length. The distance from the edge of pavement on the vehicular turnaround to the right-of-way line should not be less than the distance from the edge of pavement to right-of-way line on the street approaching the turn-around. Cul-de-sacs should not be used to avoid connection with an existing street or to avoid the extension of an important street.

F. Alleys

1. Alleys shall be required to serve lots used for commercial and industrial purposes except that this requirement may be waived where other definite and assured provision is made for service access.

   Alleys shall not be provided in residential subdivisions unless necessitated by unusual circumstances.

2. The width of an alley shall be at least twenty (20) feet.

3. Dead-end alleys shall be avoided where possible, but if unavoidable, shall be provided with adequate turn-around facilities at the dead-end as may be approved by the Planning Board.

4. Sharp changes in alignment and grade shall be avoided.

G. Permits For Connection To State Roads

An approved permit is required for connection to any existing state system road. This permit is required prior to any construction on the street or road. The application is available at the office of the nearest District Engineer of the Divison of Highways.

H. Offsets To Utility Poles

Poles for overhead utilities should be located clear of roadway shoulders, preferably a minimum of at least 30 feet from the edge of pavement. On streets with curb and gutter, utility poles shall be set back a minimum distance of 6 feet from the face of curb.

I. Wheel Chair Ramps

In accordance with Chapter 136, Article 2A, §136-44.14, all street curbs in North Carolina being constructed or reconstructed for maintenance purposes, traffic operations, repairs, correction of utilities, or altered for any reason after September 1, 1973, shall provide wheelchair ramps for the physically handicapped at all intersections where both curb-and-gutter and sidewalks are provided and at other major points of pedestrian flow.

Wheelchair ramps and depressed curbs shall be constructed in accordance with details contained in the Department of Transportation, Divison of Highways, Publication entitled, "Guidelines, Curb Cuts and Ramps for Handicapped Persons".

J. Horizontal Width on Bridge Deck

1. Roadway widths for bridges to remain in place when the approach roadway is reconstructed.

TRAFFIC Design Year ADT (2-Way)	BRIDGE DECK CLEAR WIDTH*, Local Syst. (bcd)	Coll. Syts. (bcd)	FT. Arter. Syst. (a)
500 & Under	20	22	28' Min.
501-2000	22	22	See Note
2001-4000	24	24	(a)
Over 4000	28	28	

*Clear width between curbs or rails, whichever is less.

a. Width of approach travel lanes plus 4 feet clear deck width, but not less than width shown.

b. Width of approach travel lanes plus 2 feet clear deck width, but not less than width shown.

c. For speed limits of 45 mph or less and less than 10% total trucks, clear widths that are 2 feet narrower may be used. In no case shall the deck width be less than the width of approach travel lanes.

d. These values apply to structures 100' in length or less. Structures greater than 100' in length should be analyzed individually by taking into consideration the clear width provided, safety, traffic volumes, remaining life of the structure, design speed, and other pertinent factors.

2. Curb and Gutter

The clear width for new bridges on streets with curb and gutter approaches shall be the same as the curb to curb approach width except where sidewalks or bikeways are carried across the structure.

The 2' gutter widths shown in this policy are based upon the use of the standard 2'-6" curb and gutter. If other curb and gutter widths are used, bridge widths will be adjusted accordingly.

3. Unpaved Approach

When bridges are constructed on unpaved roads, the approaches to the bridge shall be paved with an approved asphalt surfacing for a distance of 100' from the bridge ends. This paved travel lane shall be 20' in width and flared to match the deck width of the bridge within the last 10' of pavement. Any exceptions to the above paving length will require the approval of the Chief Engineer.

4. Medians Across Bridges

On a divided highway, separate structures shall be provided unless it can be clearly shown that it is more economical to provide a single structure.

Where the approach roadway has a median barrier, the structure shall be wide enough to accommodate the same type of median barrier across the bridge.

K. Vertical Clearances

Vertical clearances shall be designed above all sections of pavement including the useable shoulders.

Vertical clearances shall be as shown below. These clearances include a 6" allowance for future resurfacing. An additional 6" range is shown to allow for the flexibility necessary in the coordination of roadway grades with final superstructure depths. Vertical clearance above these limits must be justified by economics or some fixed vertical control.

1. Over Interstates and Arterials
   Vertical Clearances - 16'-6" to 17'-0"

2. Over Local and Collector Roads and Streets
   Vertical Clearance - 15'-0" to 15'-6"

3. Over all Railroads
   Vertical Clearance - 23'-0" to 23'-6" or less if approved by Railroads

APPENDIX C

CROSS SECTION RECOMMENDATIONS AND STREET INVENTORY

Street and Intersection Capacity

In order to develop an adequate thoroughfare system and cross section recommendations, it is essential to compare existing and projected traffic volumes with the ability of the streets to move traffic at a desirable speed. The ability of a street to move traffic freely, safely, and efficiently with a minimum of delay is controlled principally by the spacing of major intersections, the width of the pavement, and the traffic control devices utilized. Thus, the ability of a street to move traffic can be increased by restricting parking and turning movements, using proper sign and signal devices, and by the application of other traffic engineering techniques.

Capacity is defined as the maximum number of vehicles which has a reasonable expectation of passing over a given section of a roadway in one direction, or in both directions, during a given time period under prevailing roadway and traffic conditions.[1] The relationship of traffic volumes to the capacity of the roadway will determine the level of service being provided. Six levels of service have been selected to identify the the conditions existing under various speed and volume conditions on any highway or street. The six levels of service are shown in Figure C-1.

The Ahoskie existing and projected capacity analyses were done based on Level of Service 'C'. That is, the value used for each roadways "capacity" is actually the traffic volume at which the level of service being provided by that segment of road will cease being 'C' and become 'D'. This value was chosen because LOS 'C' is the generally accepted urban design standard and provides a favorable trade-off between construction cost and travel service. Table 1 contains approximate LOS 'C' capacity figures for the proposed thoroughfare system.

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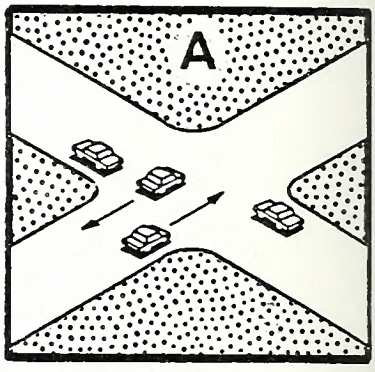
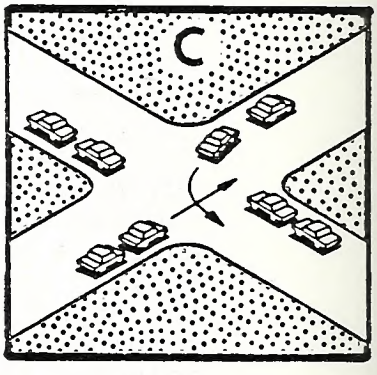
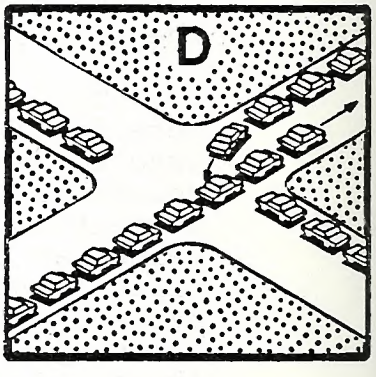
[1] Highway Capacity Manual, Highway Research Board Special Report, 87, 1965, p.5.

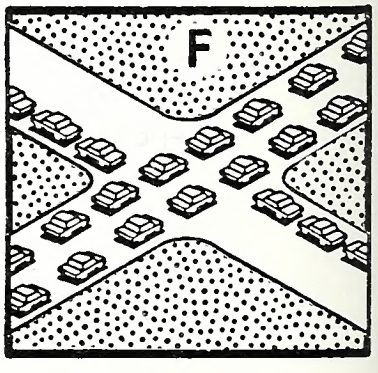
LEVEL OF SERVICE DEFINITIONS

L.O.S.	ROADWAY SEGMENTS OR CONTROLLED ACCESS HIGHWAYS	INTERSECTIONS
A	Free flow, low traffic density.	No vehicle waits longer than one signal indication.
B	Delay is not unreasonable, stable traffic flow.	On a rare occasion motorists wait through more than one signal indication.
C	Stable condition, movements somewhat restricted due to higher volumes, but not objectionable for motorists.	Intermittently drivers wait through more than one signal indication, and occasionally backups may develop behind left turning vehicles, traffic flow still stable and acceptable.
D	Movements more restricted, queues and delays may occur during short peaks, but lower demands occur often enough to permit clearing, thus preventing excessive backups.	Delays at intersections may become extensive with some, especially left-turning vehicles waiting two or more signals indications, but enough cycles with lower demand occur to permit periodic clearance, thus preventing excessive back-ups.
E	Actual capacity of the roadway involves delay to all motorists due to congestion.	Very long queues may create lengthy delays, especially for left turning vehicles.
F	Forced flow with demand volumes greater than capacity resulting in complete congestion. Volumes drop to zero in extreme cases.	Backups from locations downstream restrict or prevent movement of vehicles out of approach creating a storage area during part or all of an hour.









SOURCE. A Policy on Design of Design of Urban Highways and Arterial Streets - AASHTO, 1973 based upon material published in Highway Capacity Manual, National Academy of Sciences, 1965.

APPENDIX C
FIGURE C-1

Design Requirements

Design requirements for thoroughfares vary according to the desired capacity and level of services to be provided. Universal standards in the design of thoroughfares are not practical. Each street section must be individually analyzed and its design requirements determined on the basis of amount and type of projected traffic, existing capacity, desired level of services, and available right-of-way.

Typical cross section recommendations are shown in Figure C-2. Cross section "A" is typical for controlled access freeways. The 46 foot grassed median is the minimum desirable median width, but there could be some variation from this depending upon design considerations. Slopes of 8:1 into 3 foot drainage ditches are desirable for traffic safety. Right-of-way requirements would typically vary upward from 228 feet depending upon cut and fill requirements.

Cross section "B" is typical for four lane divided highways in rural areas which may have only partial or no control of access. The minimum median width for this cross section is 30 feet, but a wider median is desirable. Design requirements for slopes and drainage would be similar to cross section "A", but there may be some variation from this depending upon right-of-way constraints.

Cross section "C", seven lane urban, and cross section "D", five lane urban, are typical for major thoroughfares where frequent left turns are anticipated as a result of abutting development or frequent street intersections.

Cross sections "E" and "F" are used on major thoroughfares where left turns and intersecting streets are not as frequent. Left turns would be restricted to a few selected intersections.

Cross section "G" is recommended for urban boulevards or parkways to enhance the urban environment and to improve the compatibility of major thoroughfares with residential areas. A minimum median width of 24 feet is recommended with 30 feet being desirable.

Typical cross section "H" is recommended for those road segments with minimal mid-block turning movements and restricted right-of-way, where traffic projections indicate a need for a multi-lane cross section. An additional left turn lane would probably be required at major intersections.

Thoroughfares which are proposed to function as one-way traffic carriers would typically use cross section "I". Cross section "J" and "K" are usually recommended for minor throughfares since these facilities usually serve both land service and traffic service functions. Cross section "J" would be used on those minor throughfares where parking on both sides is needed as a result of more intense development.

Cross section "L" is used in rural areas or for staged construction of a wider multilane cross section. On some thoroughfares projected traffic volumes may indicate that two travel lanes will adequately serve travel for a considerable period of time.

The curb and gutter urban cross sections all illustrate the sidewalk adjacent to the curb with a buffer or utility strip between the sidewalk and the minimum right-of-way line. This permits adequate setback for utility poles. If it is desired to move the sidewalk further away from the street to provide additional separation for pedestrians or for aesthetic reasons, additional right-of-way must be provided to insure adequate setback for utility poles.

Rights-of-way shown for the typical cross sections are the minimum rights-of-way required to contain the street, sidewalks, utilities, and drainage facilities. Cut and fill requirements may require either additional right-of-way or construction easements. Obtaining construction easements is becoming the more common practice for urban thoroughfare construction.

If there is sufficient bicycle travel along the thoroughfare to justify a bicycle lane or bikeway, additional right-of-way may be required to contain the bicycle facilities. The North Carolina Bicycle Facility and Program Handbook[2] should be consulted for design standards for bicycle facilities.

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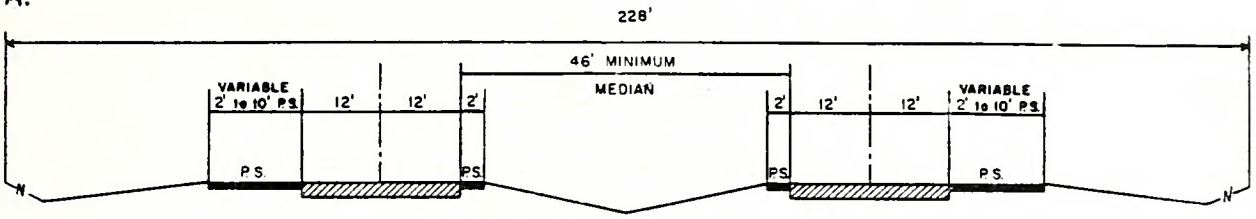
[2] The North Carolina Bicycle Facility and Program Handbook, Barton-Aschman Associates, Inc., April, 1975.

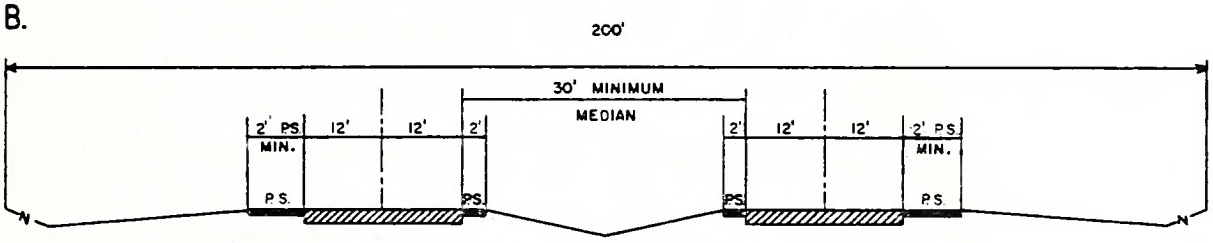
TYPICAL THOROUGHFARE CROSS SECTIONS

A.



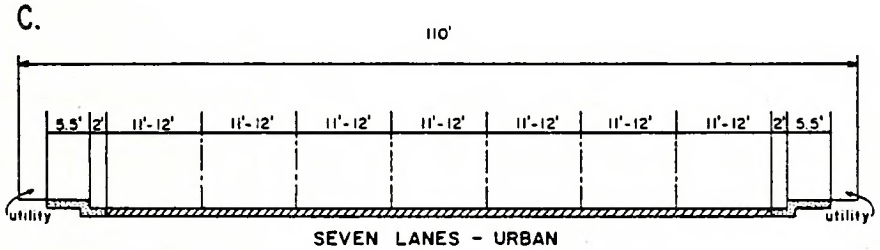
FOUR LANES DIVIDED WITH MEDIAN - FREEWAY

B.



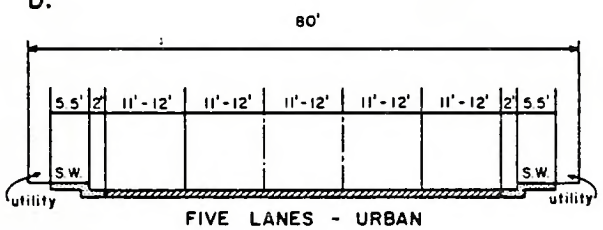
FOUR LANES DIVIDED WITH MEDIAN - RURAL

C.



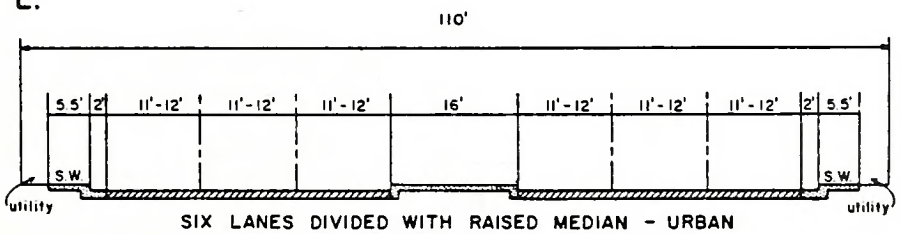
SEVEN LANES - URBAN

D.



FIVE LANES - URBAN

E.

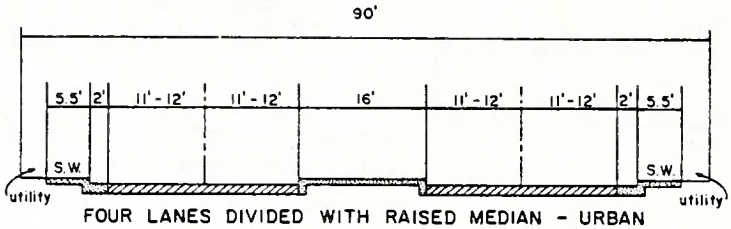


SIX LANES DIVIDED WITH RAISED MEDIAN - URBAN

APPENDIX C
FIGURE C-2

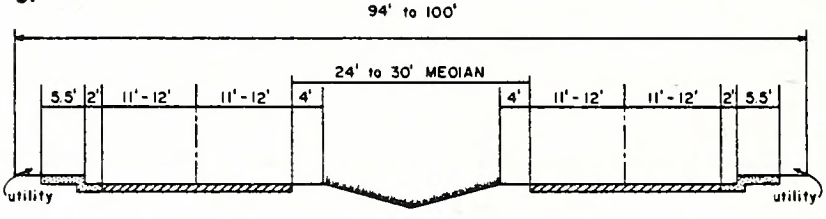
TYPICAL THOROUGHFARE CROSS SECTIONS
(CONTINUED)

F.



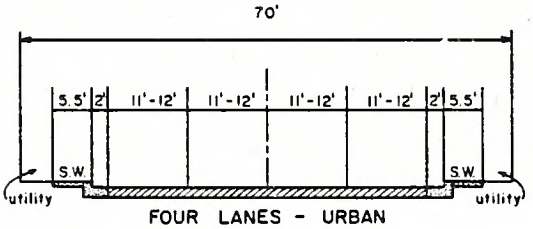
FOUR LANES DIVIDED WITH RAISED MEDIAN - URBAN

G.



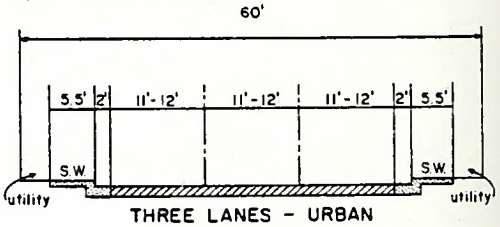
FOUR LANES DIVIDED - URBAN BOULEVARD
GRASS MEDIAN

H.



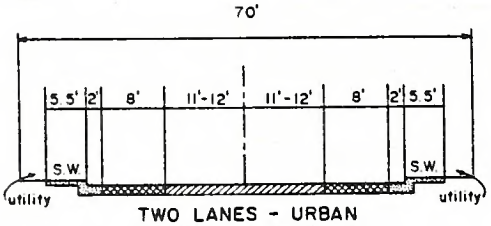
FOUR LANES - URBAN

I.



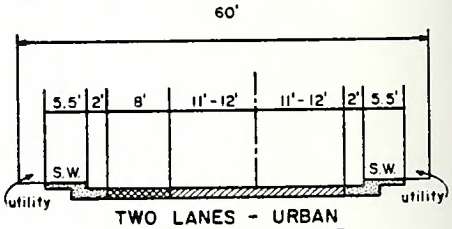
THREE LANES - URBAN

J.



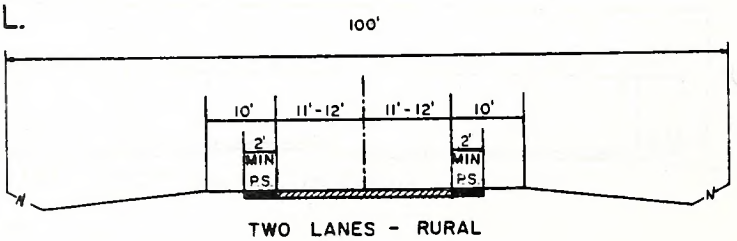
TWO LANES - URBAN
PARKING ON EACH SIDE

K.



TWO LANES - URBAN
PARKING ON ONE SIDE

L.



TWO LANES - RURAL

APPENDIX C
TABLE 1

AHOSKIE THOROUGHFARE PLAN STREET TABULATION AND RECOMMENDATIONS

FACILITY & SECTION	DIST MI	EXISTING X-SECTION RDWY FT	EXISTING X-SECTION ROW FT	CAPACITY CURRENT (FUTURE)	1984 ADTS	2005 ADTS	RECOMMENDED X-SECTION RDWAY (ULT)	RECOMMENDED X-SECTION ROW (ULT)
ACADEMY STREET								
US 13 NORTH								
N.STUDY LIMITS-SR 1213	.41	24	60	11000	4400	7000	ADQ	ADQ
SR 1213-MODLIN HATCHERY	.27	24	60	11000	7250	8900	(D)	(90)
MODLIN HATCHERY-HOLLOMAN LP	1.34	24	60	11000	8300	10600	(D)	(90)
HOLLOMAN LOOP-ALTON	.45	44	60	21200	9450	10600	ADQ	ADQ
ALTON-FIRST	.20	44	60	21200	9500	9500	ADQ	ADQ
FIRST-CHURCH	.20	36	60	14600	11150	13700	(J)	(70)
CHURCH-MEMORIAL	.27	44	60	21200	8900	16000	ADQ	ADQ
NC 42 WEST								
MEMORIAL-SUNBEAM PLANT	1.10	24	100	(32000)	5700	10400	D	ADQ
SUNBEAM PLANT-SR 1106	0.87	24	100	(32000)	5100	11600	D	ADQ
SR 1106-W.STUDY LIMITS	0.65	24	100	11000	3000	6000	ADQ	ADQ
ALTON STREET								
PEMBROKE-ACADEMY	.21	30	50	13000	400	500	ADQ	ADQ
ACADEMY-MCGLOHON	.20	30	50	13000	500	600	ADQ	ADQ
BOONE ROAD (SR 1108)								
W.STUDY LIMITS-NC 11	.19	18	60	8100	800	2600	22	ADQ
NC 11-SUNBEAM PLANT EXT.	.79	18	60	8100	1000	7800	24	ADQ
*SUNBEAM PLANT EXT-SR 1106	.48			(11000)		5500	L	100
CATHERINE STREET								
HOLLOMAN-SNIPE	.13	18	60	8100	100	200	(K)	ADQ
SNIPE-HAYES	.47	34	60	14000	100	200	ADQ	ADQ
HAYES-FIRST	.07	36	60	14600	750	1800	ADQ	ADQ
FIRST-MAIN	.14	40	60	16400	1100	1700	ADQ	ADQ
MAIN-CHURCH	.06	40	60	16400	800	2000	ADQ	ADQ
CATHERINE CREEK ROAD (SR 1415 & SR 1456)								
SR 1415								
DT ROAD-SR 1413	.85	22	60	9500	2000	2400	ADQ	ADQ
SR 1413-US 13 BYPASS	.34	22	60	9500	4000	5000	ADQ	ADQ
US 13 BYPASS-MALIBU	.14	22	60	9500	4200	8400	(J)	(70)
MALIBU-HOLLOMAN	.46	40	60	16400	4300	9000	ADQ	ADQ
HOLLOMAN-RHUE	.43	40	47	16400	6000	10500	ADQ	ADQ
SR 1456								
RHUE-FIRST	.22	30	32	13000	1600	3400	ADQ	ADQ
FIRST-MAIN	.19	30	32	13000	2500	6000	ADQ	ADQ
MAIN-CHURCH	.08	30	32	13000	7000	8000	(H)	(80)
CHURCH-MEMORIAL	.32	30	32	13000	9800	10000	(H)	(80)

APPENDIX C
TABLE 1 CONTINUED

AHOSKIE THOROUGHFARE PLAN STREET TABULATION AND RECOMMENDATIONS

FACILITY & SECTION	EXISTING X-SECTION DIST MI	RDWY FT	ROW FT	CAPACITY CURRENT (FUTURE)	1984 ADTS	2005 ADTS	RECOMMENDED X-SECTION RDWAY (ULT)	ROW (ULT)
CHURCH STREET								
PEMBROKE-ACADEMY	.21	30	60	13000	500	2200	ADQ	ADQ
ACADEMY-MCGLOHON	.19	30	60	13000	3500	6200	ADQ	ADQ
MCGLOHON-CATHERINE	.23	30	60	13000	4750	6200	ADQ	ADQ
CATHERINE-RHUE	.14	30	60	13000	4500	4000	ADQ	ADQ
RHUE-CATHERINE CREEK	.26	30	60	13000	4300	5200	ADQ	ADQ
COPELAND ROAD (SR 1411)								
US 13-HALLS SIDING	1.30	18	60	8100	800	1800	20	ADQ
DT ROAD (SR 1419)								
US 13-NC 561	1.71	16	60	7600	500	1800	20	ADQ
NC 561-HOLLOMAN EXTENSION	1.13	18	60	8100	1800	2500	22	ADQ
HOLLOMAN EXT-CATHERINE CRK.	1.16	18	60	8100	1500	2000	22	ADQ
FIRST STREET								
NC 561 WEST								
W.STUDY LIMITS-NC 11	.13	20	60	8700	3500	8000	(D)	(90)
NC 11-HOLLOMAN LOOP	.94	24	60	11000	4500	8800	(H)	(80)
HOLLOMAN LOOP-PINE RIDGE	.32	24	60	11000	4700	6300	(H)	(80)
PINE RIDGE-A. CEMETERY	.18	38	60	15500	4900	6300	(H)	(80)
AHOSKIE CEMETERY-PEMBROKE	.30	24	60	11000	5900	6000	(H)	(80)
PEMBROKE-ACADEMY	.20	35	50	14200	4900	6000	ADQ	ADQ
ACADEMY-MITCHELL	.26	30	60	13000	2650	3900	ADQ	ADQ
MITCHELL-CATHERINE	.14	35	60	14200	2250	3800	ADQ	ADQ
CATHERINE-RHUE	.13	35	60	14200	1000	3000	ADQ	ADQ
RHUE-CATHERINE CREEK	.08	35	60	14200	900	3100	ADQ	ADQ
HALLS SIDING ROAD (SR 1409)								
N.STUDY LIMITS-COPELAND	.33	20	60	8700	500	1000	ADQ	ADQ
COPELAND-SR 1413	.88	18	60	7600	950	1500	20	ADQ
SR 1413-SR 1403	.25	18	60	7600	300	500	20	ADQ
SR 1403-DT ROAD	.68	22	60	9500	1500	1700	ADQ	ADQ
HOLLOMAN AVENUE								
*SUNBEAM PLANT EXT-MEMORIAL	.30			(11000)		3850	L	100
*MEMORIAL-FIRST	.51			(13000)		5200	J	80
*FIRST-ACADEMY	1.11			(13000)		1400	J	80
*ACADEMY-MCGLOHON	.35			(13000)		2000	J	80
*MCGLOHON-CATHERINE	.24			(13000)		1800	J	80
CATHERINE-CATHERINE CREEK	.38	30	45	13000	700	2000	ADQ	ADQ
CATHERINE CREEK-DT ROAD	1.66			(11000)		1500	L	100
MAIN STREET								
PEMBROKE-ACADEMY	.22	38	60	15500	700	1000	ADQ	ADQ
ACADEMY-MCGLOHON	.19	40	60	16400	4800	7500	ADQ	ADQ
MCGLOHON-CATHERINE	.20	40	60	16400	6350	8600	ADQ	ADQ
CATHERINE-RHUE	.13	40	60	16400	6400	8000	ADQ	ADQ
RHUE-CATHERINE CREEK	.21	40	60	16400	6400	7800	ADQ	ADQ

APPENDIX C
TABLE 1 CONTINUED

AHOSKIE THOROUGHFARE PLAN STREET TABULATION AND RECOMMENDATIONS

FACILITY & SECTION	EXISTING DIST MI	X-SECTION RDWY FT	X-SECTION ROW FT	CAPACITY CURRENT (FUTURE)	1984 ADTS	2005 ADTS	RECOMMENDED X-SECTION RDWAY (ULT)	RECOMMENDED X-SECTION ROW (ULT)
MCGLOHON STREET								
*HOLLOMAN LOOP-MCKINLEY	.09			(12000)		650	K	60
MCKINLEY-BAKER	.08	30	60	13000	100	650	ADQ	ADQ
*BAKER-ROGERS	.21			(12000)		700	K	60
ROGERS-ALTON	.07	30	60	13000	100	700	ADQ	ADQ
ALTON-FIRST	.21	30	60	13000	300	300	ADQ	ADQ
FIRST-MAIN	.13	30	60	13000	500	2200	ADQ	ADQ
MAIN-CHURCH	.08	30	60	13000	100	200	ADQ	ADQ
MEMORIAL DRIVE								
*HOLLOMAN LOOP-WOODLAND	.44			13000		5400	J	80
WOODLAND-EDGEWOOD	.12	40	60	16400	N/A	5100	ADQ	ADQ
EDGEWOOD-PEMBROKE	.14	30	60	13000	N/A	5000	(J)	(70)
PEMBROKE-ACADEMY	.17	30	60	13000	1900	4000	(J)	(70)
US 13, NC 42, & NC 561								
ACADEMY-RHUE	.12	44	100	21200	9400	15000	ADQ	ADQ
	.45	28	100	(26000)	9900	15000	H	ADQ
RHUE-PEACHTREE	.20	28	100	(26000)	9200	14200	H	ADQ
PEACHTREE-CATHERINE CREEK	.26	48	100	23400	0400	15500	ADQ	ADQ
CATHERINE CREEK-GODWIN	.11	64	80	32000	7000	18000	ADQ	ADQ
GODWIN-NC 561 EAST	.45	64	80	32000	5000	13000	ADQ	ADQ
MODLIN HATCHERY ROAD (SR 1130)								
W.STUDY LIMITS-NC 11	.49	18	60	8100	1000	1800	22	ADQ
NC 11-US 13	1.00	18	60	8100	1300	2300	22	ADQ
NEW AHOSKIE ROAD (SR 1101)								
MEMORIAL-PIERCE	.28	22	60	9500	2800	4100	(J)	(70)
PIERCE-SUNBEAM PLANT	.98	20	60	8700	1850	3000	22	ADQ
SUNBEAM PLANT-S.STUDY LIMITS	.74	18	60	7600	700	1200	22	ADQ
NC 11								
SR 1213-MODLIN HATCHERY	.96	24	400	12000	2600	6000	ADQ	ADQ
MODLIN HATCHERY-NC 561	1.43	24	400	12000	2400	6900	ADQ	ADQ
NC 561-BOONE	.57	24	400	12000	2400	6300	ADQ	ADQ
BOONE-S.STUDY LIMITS	1.10	24	400	12000	2600	6000	ADQ	ADQ
NC 561 EAST								
US 13-US 13 BYPASS	.59	20	60	8700	2800	4400	(H)	(80)
US 13 BYPASS-DT ROAD	.98	20	60	8700	1500	2800	22	ADQ
DT ROAD-E.STUDY LIMITS	.23	20	60	8700	1600	3000	22	ADQ
PEMBROKE AVENUE								
*HOLLOMAN LOOP-TROY	.26			(12000)		100	K	60
TROY-ALTON	.13	30	40	13000	100	100	ADQ	ADQ
ALTON-FIRST	.20	30	40	13000	400	400	ADQ	ADQ
FIRST-MAIN	.13	30	50	13000	1700	2000	ADQ	ADQ
MAIN-MEMORIAL	.34	30	50	13000	1500	1500	ADQ	ADQ

APPENDIX C
TABLE 1 CONTINUED

AHOSKIE THOROUGHFARE PLAN STREET TABULATION AND RECOMMENDATIONS

FACILITY & SECTION	EXISTING X-SECTION DIST MI	RDWY FT	ROW FT	CAPACITY CURRENT (FUTURE)	1984 ADTS	2005 ADTS	RECOMMENDED X-SECTION RDWAY (ULT)	ROW (ULT)
RHUE STREET								
CATHERINE CREEK-FIRST	.20	35	60	14200	3000	4500	ADQ	ADQ
FIRST-MAIN	.13	35	60	14200	2400	4900	ADQ	ADQ
MAIN-CHURCH	.07	35	60	14200	2000	2600	ADQ	ADQ
CHURCH-MEMORIAL	.25	26	60	11600	1500	2500	ADQ	ADQ
SUNBEAM PLANT ROAD (SR 1105)								
*BOONE-NC 42	1.59			(11000)		4250	L	100
NC 42-NEW AHOSKIE	1.92	20	60	8700	700	3300	24	ADQ
*NEW AHOSKIE-US 13	1.47			(11000)		2200	L	100
SR 1106								
*BOONE-NC 42	.49			(11000)		4700	L	100
NC 42-S.STUDY LIMITS	1.63	18	60	8100	600	3000	22	ADQ
SR 1213								
NC 11-US 13	.79	24	100	11000	2500	4500	ADQ	ADQ
SR 1403 (AHOSKIE-COFIELD ROAD)								
N.STUDY LIMITS-SR 1413	.05	22	60	9500	1950	4000	ADQ	ADQ
SR 1413-HALLS SIDING	.49	22	60	9500	1000	1700	ADQ	ADQ
SR 1413 (CHESTERFIELD CB ROAD)								
SR 1403-HALLS SIDING	.34	18	60	8100	700	3500	22	ADQ
HALLS SIDING-CATHERINE CK.	1.23	18	60	8100	1200	3400	22	ADQ
SR 1453								
CATHERINE CREEK-SR 1454	.09	16D	N/A	4600	N/A	1600	24	60
*SR 1454-US 13 BYPASS	.18			(11000)		1500	L	100
US 13 SOUTH & NC 42 EAST								
NC 561-US 13 BYPASS	.89	22	60	9500	6500	8000	(D)	(90)
US 13 BYPASS-SR 1418	.33	22	60	9500	5000	9000	(D)	(90)
SR 1418-DT ROAD	.79	22	60	9500	4200	8300	(D)	(90)
DT ROAD-S.STUDY LIMITS	.10	22	60	9500	4500	7400	24	ADQ
* US 13 BYPASS								
SR 1213-CATHERINE CREEK	2.03			(11000)		5600	L	100
CATHERINE CK.-HOLLOMAN EXT.	.74			(11000)		4500	L	100
HOLLOMAN EXT.-NC 561	1.24			(11000)		4000	L	100
NC 561-US 13 SOUTH	.71			(11000)		3400	L	100

* INDICATES PROPOSED NEW FACILITY

16D: INDICATES EXISTING DIRT OR GRAVEL SURFACE

NUMBERS IN THE RECOMMENDED ROADWAY CROSS-SECTION COLUMN INDICATE A RECOMMENDATION FOR A MAINTENANCE-TYPE WIDENING TO RURAL DESIGN STANDARDS AS CURRENT LAND USE AND TRAFFIC PROJECTIONS DO NOT INDICATE A NEED FOR URBAN THOROUGHFARE CROSS SECTIONS

TOWN OF AHOSKIE
NORTH CAROLINA

THOROUGHFARE PLAN

LEGEND

	EXISTING	PROPOSED
MAJOR THOROUGHFARES	━━━	┅┅┅
MINOR THOROUGHFARES	───	┄┄┄

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AHOSKIE
AND VICINITY

HERTFORD COUNTY

NORTH CAROLINA

PREPARED BY THE
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS — PLANNING AND RESEARCH BRANCH
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SCALE

AUGUST, 1975

Thoroughfare Plan

GRAPHICS BY
JANIE BOLT